

The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 751.—Vol. XX.]

LONDON, SATURDAY, JANUARY 12, 1850.

[PRICE 6D.]

CAMBORNE-MINE AND MATERIALS FOR SALE.

MESSRS. RICHARDS & PRYOR respectfully announce that an AUCTION will be held on Monday, the 14th day of January next, at Two o'clock in the afternoon, at Matthews's Hotel, in the county of Cornwall, for SELLING, for the residue of the several terms now subsisting therein, under the existing lease granted by the lords of the soil, all that COPPER MINE, or ADVENTURE, called or known by the name of

SOUTH ROSKEAR.

situate in CAMBORNE, in Cornwall, and extending upwards of a mile in length on the course of the lodes, a very considerable portion of the limits of which is unexplored, and which mine is contiguous to or surrounded by some of the most productive mines in Cornwall, being within a short distance of, and bounded on the east by, East Wheal Crofty; on the north by North Roskear; and on the south by Dolcoath and Camborne Consols—all of which have yielded large profits to the adventurers for many years, together with the carpenter's and smith's shops, engines, machinery, and materials belonging to the mine, comprising TWO STEAM-ENGINES, of 60 and 55-inch cylinders; TWO STEAM WHIMS, of 20 and 16-inch cylinders; TWO HORSE WHIMS; about 350 fms. of PITWORK, with all requisite and necessary machinery and materials.

The mine is at present divided into 114 shares, and has been worked for 26 years and upwards, during which large profits have been realised.

The limits of the sets have been recently extended, which has rendered the erection of a new steam-engine necessary, and some of the adventurers being unable to contribute the requisite amount for carrying out the new workings, the adventurers have been compelled to offer the entire mine for sale. Its position and contiguity to the several mines referred to, offers a fair inducement to speculators.

Any information that may be desired will be furnished by the agents at the mine, who will show the workings, and the conditions of sale may be inspected prior to the auction, and any further particulars had on application at the offices of Messrs. John Rodd and Darke, solicitors, Penzance, Cornwall.—Dated Dec. 26, 1849.

WHEAL TRYPHENA MINE, CAMBORNE.

A DESIRABLE OPPORTUNITY will be offered to PERSONS DESIROUS OF PURCHASING SHARES IN THE ABOVE MINE.

MR. WILLIAM RICHARDS will offer FOR SALE, BY AUCTION, on Monday, the 14th of January next, at Matthews's Hotel, CAMBORNE, immediately after the sale of South Roskear Mine and Materials, which will take place at the said hotel, at Two o'clock in the afternoon, in lots,

TWELVE (367THS) SHARES IN WHEAL TRYPHENA MINE,

Late the property of a Gentleman, now deceased.

This mine is situate in the most productive mining district of the county, and bounded by Conduvor on the east, and in the immediate neighbourhood of the numerous and well-known productive mines in the parish of Camborne.

The agents on the mine will furnish any particulars as to the workings and prospects, and for further information application should be made to Mr. Richards, auctioneer, Penzance.—Dated Jan. 4, 1850.

IMPORTANT AND EXTENSIVE SALE OF RAILWAY PLANT. Including STEAM-ENGINES, EARTH WAGGONS, IRON RAILS, MEMEL TIMBER, DEALS, BATTENS, FOREIGN AND ENGLISH TIMBER SLEEPERS, on the Manchester, Sheffield, and Lincolnshire Railway, at GAINSBOROUGH.

MR. G. O. BROWN is honoured with instructions from Messrs. Stephenson, to OFFER for UNRESERVED COMPETITION, on Tuesday and Wednesday, the 15th and 16th days of January, 1850; on Tuesday, the whole of their various MATERIALS, in their yard and premises at Spital-road Bridge, near Gainsborough Railway Station; and on Wednesday, at the River Trent Bridge, near Gainsborough, the remaining portion of their extensive stock of

RAILWAY PLANT.

Which will include 2 6-horse high-pressure (Gough's patent) PORTABLE ENGINES, with bell crank, &c., on cast-iron bedplate, 7 feet 6 inches by 4 feet 6 inches; cylinders 7 inches diameter, stroke 20 inches; boiler 7 feet long by 4 feet 4 inches diameter; fly-wheel 7 feet diameter, with 14 spokes in boiler 4 inches diameter—one fitted with double-headed 48-inch wrought-iron crank, and the other with three cranks and clutch boxes, with wrought-iron shafting to work three pile engines, together with 1 12-inch pump, 90 feet long, and 1 14-inch pump, 27 feet long; 5 double purchase and 4 single ditto crabs, 1 double purchase crane, nearly new, a large quantity of crane chains, 4 inch to 14 inch, a new 6-inch rope, 90 feet long, 6 sets of 2 and 3 sheave blocks, 1 PILE ENGINE and 1 BINGING ENGINE, with two rams, 20 cwt. each, and 1 ram, 15 cwt., several small crabs, with wheels complete, 6 sets of double-flanged wheels, with wheel and pinion for travelling frames, 1 millwright's lathe, a saw mill, with saw bench, circular saw and spindle, 4 screw jacks, 3 hearths of smith's tools, complete, with bellows, anvils, vices, tongs, hammers, swages, &c., 1 set of taps and dies, complete, 2 sets of castings for travelling frames.

TWO LARGE BARGES, or TRENT LIGHTERS—open boats, in good repair, and good lighters.

About 3000 feet of MEMEL TIMBER, in various sizes.

6000 feet of 3 and 4-inch MEMEL PLANKING.

4000 LARCH and MEMEL SLEEPERS, 8 ft. 6 in. long and upwards.

500 2½ and 3 yards EARTH WAGGONS.

500 tons and upwards of temporary IRON RAILS, about 43 lbs. per yard.

The whole of the BUILDING MATERIALS, contained in the cottage, office, and work-shops, near the Trent Bridge; also office fixtures and furniture, joiners' work benches, letter press, office desk, stools, &c. Also, a large quantity of good LARCH and MEMEL SLEEPERS, 8 ft. 6 in. and upwards long, 4 in. by 9 in., and 5 in. by 10 in., suitable for colliery or other roads, and which are now lying near Kirtou, Hildesdon, and Brigg.

TUESDAY'S SALE, at the Spital-road Yard, amongst other things, will embrace EARTH WAGGONS, TEMPORARY RAILS, LARCH, MEMEL, and other SLEEPERS, a portable travelling crane, a small warehouse crane, a quantity of 14-inch square bar-iron, several tons of new iron, of various sizes, including nail-roads, bar and hoop iron; 1 pair of smith's bellows, smith's tools, swages, block, bench, and vice; a quantity of chains, of various sizes, 4 large pulleys, 3 ft. 6 in. diameter, and 2 pulleys, 20 in. diameter, 1 pair of mill wheels, 2 ft. 10 in. diameter, 2½-inch pitch, with 20 lineal feet of cast-iron shafting, and 2 large plunger blocks, 4 sets of 12-inch diameter wheels and axles, 3 ft. 4 in. gauge.

1 pair of FRENCH BURR MILL-STONES, 4 ft. 4 in. diameter, with spindle, brass step, and bracket; 1 single purchase crab, 6-inch metal pump, 30 feet long, 5 small hand pumps, a large quantity of larch and other timber, barrows, and planks, 2 broad wheeled carts, 2 2-wheeled carts, 4 strong timber carriages, weighing machine and weights, small truck, several sets of cart harness, a large quantity of fly tools, picks, and hammers, a sugar mill, coffee mill, and various utensils belonging to the grocery trade, a valuable office desk, with 11 large drawers, 1 smaller desk, with office stools, fender and fire irons, and a great variety of other articles too numerous to particularise.—The sale will commence each day at Ten o'clock precisely—Masborough, Dec. 23, 1849.

IMPORTANT SALE OF PILCHARD SEANS, SHARES IN VESSELS AND MINES, AT PENZANCE, CORNWALL.

MESSRS. GEO. H. BELLINGER & WM. RICHARDS, will SELL, BY AUCTION (unless previously disposed of by PRIVATE CONTRACT), on Tuesday, the 23rd day of January next, by Two o'clock in the afternoon, at Ball's Union Hotel, in PENZANCE, in such lots as may suit the convenience of purchasers, SHARES in the following

PILCHARD FISHERIES: viz.—

30-100ths in the BATTEN FISHING CO., at St. Ives, consisting of 7 Seans and 10 Boats.

40-100ths in the ALLIANCE FISHING CO., at St. Ives, with the like number of Seans and Boats.

25-100ths in the RUTH FISHING CO., at St. Ives, with like number of Seans and Boats.

24-64ths in the HAPPY RETURN FISHING CO., at Newlyn, near Penzance, with the Seans and Boats belonging to the company.

10-64ths in the ATLANTIC FISHING CO., at Newlyn.

The Pilchard Fishery at St. Ives is one of the most prosperous concerns in the West of England; the catches of fish of late years have been from 10,000 to 20,000 hogs, annually.

VESSELS.

8-64th shares in the newly-built Barque, SHANNON, of this port, William Semmens Daves, Master, 500 tons burthen, now on a voyage in the Mediterranean.

10-64th shares in the Brigantine, SCOTIA, of this port, James Daves, Master, 170 tons burthen, now on a voyage to Naples.

32-64th shares in the Schooner, VENUS, of this port, George Bawden, Master, 180 tons burthen, a regular trader between Penzance and Wales.

32-64th shares in the Schooner, ANN, of this port, Philip Johns, Master, 96 tons burthen, a constant trader between Penzance and Wales.

16-64th shares in the Schooner, CHARLOTTE ANN, of this port, James Cockburn, Master, 120 tons burthen, now in the Mediterranean, bound home.

MINES.

Shares in the following valuable and productive Mines, with the Tin, Tinstuff, Copper and other ores, Engines, Whims, Tools, Tackle, and other materials, property, and effects thereunto belonging: viz.—

8-100th shares in BOTALLACK, in the parish of St. Just, in Penwith.

15-100th shares in LEVANT, in the parish of St. Just.

25-673d shares in DING DONG, in the parish of Madron.

39-134th shares in BOSWEDDEN, in the parish of St. Just.

7-40th shares in WHEAL OWLES, in the parish of St. Just.

30-40th shares in NANPEAN and BOLLLOWAL, in the said parish of St. Just.

30-120th shares in WHEAL REETH, in the parish of Uney Lelant.

8-94th shares in BALNOON CONSOLS, in the said parish of Uney Lelant.

4-128th shares in HAWKE'S POINT, in the parish of Bragoe.

2-119th shares in GREAT WORK CONSOLS, in the said parish of Bragoe.

1-98th share in WHEAL VOR Consolidated Mines, in the said parish of Bragoe.

8-128th shares in BUDNICK CONSOLS, in the parish of Penzance, near St. Agnes.

Full particulars of the various lots in which the Fisheries, Shipping, and Mine Shares will be put up to Auction may be obtained in a printed Catalogue, to be had of the Auctioneers, at Penzance; and also of Messrs. Rowe & Son, printers, Penzance; Mrs. Heard and Sons, printers, Truro; Mr. Caryon, printer, Helston; Mr. Dixon, printer, Falmouth; Mr. Drew, printer, St. Austell; Mr. Richard Esterbrook, printer, Liskeard; and at the office of the Mining Journal, 26, Fleet-street, London; and all further particulars may be had on application to the Auctioneers; or to Messrs. John Rodd, and Darke, solicitors, Penzance.—Dated Penzance, December 26, 1849.

NEW PATENT LOCOMOTIVE ENGINE.—TO RAILWAY COMPANIES.

MESSRS. HARDWICK will SELL, BY AUCTION, at the Leeds Terminus of the North Midland Railway, Hansard-lane, Leeds, that celebrated PATENT NEW LOCOMOTIVE ENGINE and TENDER, known as the

SANSPAREIL.

manufactured by Mr. Timothy Hackworth, Soho Engine Works, Sheldon, near Darlington. It will be recollected that this locomotive engine was noticed by a correspondent of the Mining Journal, Sept. 18th, 29th, and October 13th, 1849, on account of her great economy in fuel, speed, and power, combined with a superiority of design and unequalled workmanship. The engine belongs to the kind called first-class coaching engine; the cylinders are inside of the smoke-box, working to a crank-shaft, the bearings of which are carried by an inner frame, formed of a wrought-iron slab, varying from 1½-inch thick at the fire box end to 4-inch at the smoke-box; she is carried on six entire malleable iron round-spoked wheels, driving wheels 6 feet 6 inches diameter, leading and trailing wheels 4 feet diameter, 13 ft. 6 in. centre and centre, and having their bearings in the outer frame, which, together with the axle guards, is formed of a wrought-iron plate 1½ inch thick. The boiler is a novelty in its manufacture, being made of bowling-plates, welded together with solid angle irons for joining to fire-box and smoke box. It contains 21 brass tubes, 10 feet 7 inches long, 2 inches external diameter, with copper fire-box. Total amount of heating surface about 1300 feet; diameter of cylinder 15 inches, stroke 22 inches; weight, with the steam up, 23 tons 15 cwt. The water tank is carried on six entire malleable iron round-spoked wheels, 3 ft. 6 in. diameter, contains upwards of 1500 gallons of water, and is provided with a powerful rack and pinion screw brake, capable of locking all six wheels; the outer frame is of malleable iron, 1½ in. thick, with the axle guards in one piece with the frame plate. We can say, without fear of contradiction, that this locomotive engine is the most economical extant. After a course of careful experiments on the York, Newcastle, and Berwick Railway, also on the Midland Counties, it has been proved that the amount of saving effected, at the lowest estimate, is 25 per cent. better than the best engines of the present day. This great economy is effected by a new modification of the slide valves, which the manufacturer has recently secured by letters patent.

This locomotive engine evinces superiority in design and general construction, with considerable finish in the manufacture, which, together with the great economy exhibited in the consumption of fuel, and the celebrity she has attained on those railways on which she has been experimented, combined with the high character of the manufacturer, as the earliest engineers, whose long standing and extensive experience in the construction and manufacture of locomotive engines, cannot fail to recommend her as a desirable purchase to any railway company.

The sale will commence at 12 o'clock at noon, on Thursday, the 17th day of January, 1850. A person will be in attendance on Tuesday, Wednesday, and Thursday, the 15th, 16th, and 17th of January, who will show the engine, and give further information. Soho Works, Sheldon, near Darlington, December 27, 1849.

TO ENGINEERS, MINING and COLLIERY COMPANIES, BREWERS, DISTILLERS, MANUFACTURERS, WHARFINGERS, and WAREHOUSE-KEEPERS, IRON-FOUNDERS, BUILDERS, and OTHERS.

IMPORTANT SALE OF SURPLUS RAILWAY MATERIAL, STEAM-ENGINES, PLANT, and MACHINERY, including 800 tons IRON.—MINORIES & BLACKWALL.

PULEN & SON respectfully announce, that they have received instructions from the directors of the London and Blackwall Railway Company to SELL, BY AUCTION, at the Minories Station, and at the Terminus, Blackwall, on Monday, 11th February, and following days, at Twelve o'clock, in consequence of the alteration in the motive power on the line, the whole of the extremely valuable

PLANT and MACHINERY

lately used in working the Rope, including 2 pairs of magnificent first-class STEAM-ENGINES, of 250 and 150-horse power each, connected by Messrs. Manday & Field, and Mr. John Barnes, and in the best possible working condition; 7 large iron tanks, by Bramah, 26 feet square and 6 feet deep, gauging 25,000 gallons each, with brass valves, sluice cocks, &c.; 2 pairs of powerful holding machines for goods, by Ellis and Noton, of Manchester, to lift 5 tons each, with large break wheels, iron cradles, and apparatus; 4 24-foot diameter iron drum-wheels for coiling the rope, with large break and pinion-wheels, iron shafting, and plunger blocks; 4 vacuum pumps, with pipes, brass cocks, rods, and fittings; 4 20-foot diameter iron cog-wheels, with powerful driving and shafting gear; 1000 feet of 12 and 9-inch flange and socket pipe, 250 feet of 2-foot 6-inch iron shafts, 20 iron girders, iron columns and framing, 3 capital wrought-iron marine boilers, 10 feet square, with three furnaces in each, large quantity of sound brickwork, and other valuable material.

May be viewed on Friday and Saturday previous to the sale.—Catalogues had at the secretary's office, Fenchurch-street Terminus; at the superintendent's office, Blackwall; and of Pullen and Son, 80, Fore-street, Cripplegate.

SUNDERLAND DOCKS.

SALE OF STEAM-ENGINES, &c., by PRIVATE CONTRACT.

TO ENGINEERS, RAILWAY CONTRACTORS, COLLIERY OWNERS, &c.

MESSRS. JOHN CRAVEN & CO., in consequence of the completion of the works of the Sunderland Docks, have for SALE the following

ENGINES, &c.:—

1. ONE HIGH-PRESSURE PUMPING ENGINE, 40-horse power, with two boilers, 25 feet long by 5 feet 6 inches diameter; also four sets of pumps, 20 inches diameter.

2. ONE HIGH-PRESSURE ENGINE, for pumping and winding, 45-horse power, with three boilers, 30 feet long by 5 feet 6 inches diameter; also two sets of pumps, 24 inches diameter, and gearing and drum, &c., for winding.

3. ONE HIGH-PRESSURE WINDING ENGINE, 12-horse power, with one boiler, 21 ft. long by 4 ft. 6 in. diameter, with gearing and drum, &c., for winding.

4. TWO HIGH-PRESSURE PORTABLE ENGINES, by Gough, each 8-horse power.

5. ONE HIGH-PRESSURE PORTABLE ENGINE, by Gough, 6-horse power.

6. TWO HIGH-PRESSURE PORTABLE ENGINES, 10-horse power each, with tubed boilers.

7. A large quantity of EARTH WAGGONS, TEMPORARY RAILS, SLEEPERS, and OTHER MATERIALS suitable for carrying on public works generally.

For further particulars apply to Messrs. John Craven & Sons, contractors, Sunderland.

TO ENGINEERS, IRON STEAM SHIPBUILDERS, MANUFACTURERS, & OTHERS.

TO BE SOLD, OR LET ON LEASE, EXTENSIVE

MANUFACTURING PREMISES, with or without steam-power, and the valuable MACHINERY. The PREMISES are situated at BLACKWALL, having a water-side frontage of about 250 feet, near the junction of the River Lea with the Thames, possessing capabilities for building iron vessels upwards of 500 tons burden. The buildings have mostly been erected within a few years, at a cost of many thousands of pounds. The situation also affords every facility for the transit of goods by land or water carriage, and coals can be landed direct from the colliery. The supply of water is unlimited, and free of expense. The Exchange and the public markets may be reached in little more than a quarter of an hour. The premises are applicable for any manufacturing business. The total area is 50,000 square feet, and the buildings are lofty, well lighted, and substantially erected.

The MACHINERY (the whole or any part of which may be taken or rejected) is of the best description, by the first makers, and with all the modern improvements, including a highly-finished STEAM-ENGINE and BOILER, 11 self-acting engine turning, boring, screw-cutting, and surface lathes, several planing, slotting, drilling, screwing, and shaping machines, 8 large grindstones, polishing wheels, all the requisite shafting and driving gear, 5 cutting and punching presses, smith's forges and tools, cranes, triangles, and every requisite for the business.

The principal factory is fitted with a 25-ton travelling crane, working on an over-head tramway the whole length of the building, on to a strong timber double frame overhanging the river, for the purpose of erecting steam machinery in vessels, loading or unloading heavy weights, and transporting them to any part of the factory.

This establishment, from situation, extent, arrangement, and construction, together with the many local advantages it possesses, offers a most desirable opportunity to any person desirous of engaging in London in any trade requiring premises where space, contiguity to the docks, Exchange, and markets, the supply of coal and water on most favourable terms, and the speedy transit of goods at a low cost, are advantages of importance.—Further particulars, with lithographic plans, and cards to view the property, may be had of Messrs. Fuller and Morsey, Billiter-street, London.

MONMOUTHSHIRE.

TO BE LET, a most desirable TRACT OF MINERAL PROPERTY, containing nearly all the SEAMS of COAL and IRONSTONE found in the South Wales district, and admirably adapted for the establishment of an extensive colliery; or, in conjunction with some adjacent properties, it would form an excellent site for the establishment of an iron-works. Being within a few miles of Newport, with which it is already connected by the Monmouthshire Canal, and a tramroad leading therefrom, it offers peculiar inducements to the capitalist.

Further particulars may be obtained on application to William Llewellin, Esq., mining and civil engineer, Pontypool; or Mr. F. Harrison, solicitor, No. 6, Bloomsbury-square, London.

IMPORTANT AND VALUABLE MINING SETT TO BE

GRANTED, ADJOINING WHEAL VINCENT, in ALTARNUN, CORNWALL. THE PROPRIETOR of an ESTATE, consisting of 300 acres of land, within a ring fence is willing to GRANT a SETT thereon, to SEARCH for MINERALS, on liberal terms. The property is situate in the parish of ALTARNUN, CORNWALL, adjoining to, and west of, the very promising adventure Wheal Vincent, and all the lodes of that mine run through it. The estate has been inspected by a respectable mining captain, and in his report to the owner of the soil, he says—"There are three lodes on Wheal Vincent Mine, now making returns, running nearly east and west—consequently, they all pass through your property, and two of them immediately on leaving the Wheal Vincent sett. It can be clearly shown that there are seven lodes of tin and copper to be found on your land. The advantages connected with the working of a mine on your property are evidently very great. There are good roads leading to the farm-house, where a water-wheel might be erected if necessary; there are immense quantities of stone for building on the spot; there is also the advantage of driving in adits on the course of the lodes to a great depth; and there is a never-failing stream of water, capable of working wheels of almost any power, so that there would be no necessity whatever for steam-power to fully prosecute the different lodes which pass through your estate."

For all further information, application may be made to Capt. James Hosking, of Caington; and to treat for the grant, to Mr. Sargent, solicitor, Liskeard.—Dated Jan., 1850.

FARBROUGH COLLIERY, near BATH.—FOR SALE, a powerful and nearly new CONDENSING STEAM-ENGINE, with 31½-inch cylinder, 6-foot stroke, and excellent WINDING and PUMPING APPARATUS.—About 150 fathoms of 9, 8, and 6-inch PIPES, with suitable working barrels and rods for plunger and lifting pumps; horse drum, crab winches, round and flat-ropes, with a variety of useful COLLIERY MATERIALS.

A person on the premises will show the above; and for further particulars apply to Mr. Richard Evans, Grove Cottage, Timsbury, near Bath.

SEA SALE COLLIERY TO BE LET, and ENTERED at

MAY next.—All that valuable and CURRENT-GOING COLLIERY, situated on the SOUTH BANK of the TYNE, at JARROW, in the county of Durham, containing the BENSHAM and LOW MAIN SEAMS of COAL in great perfection. The colliery is fitted up on the most improved manner, and may be undertaken with a very moderate capital.—For particulars apply to Mr. Matthias Dunn, colliery viewer, Newcastle-on-Tyne, or to Mr. Matthew Liddell, viewer, Benton Grange.

Newcastle-on-Tyne, Dec. 26, 1849.

TO COAL AND IRONMASTERS.—The PROPRIETOR

of an extensive range of several SEAMS of very superior COALS, on the borders of DERBYSHIRE, with the most favourable means of transit to the best market in the realm, both by railway and canal, each within a few hundred yards, is now prepared to LEASE the SAME on favourable terms. The above will be found most desirable, as a sufficient market already exists for an immense quantity of them.—Also, an EXTENSIVE RANGE of IRONSTONE may BE LET with the SAME, if desirable.

For particulars of the same, application may be made to "R. C." at the office of the Mining Journal, 26, Fleet-street, London.

FEW SHARES in a COPPER MINE, CORNWALL.

TO BE SOLD—the engine and house erected, the shaft sunk 30 fathoms, specimens of the ore of the finest quality. This will be found a lucrative investment. Address to "W. C." 53, Upper Baker-street, Regent's-park.—Every fact relating to the mine will be rendered to the purchaser.

TO CAPITALISTS who are anxious to obtain MINES for the

purpose of PROVING their MERITS, by a paid-up capital, over which they may have the superintendence.—For particulars apply by letter (post-paid), from principals only, to E. C. Manuel, 2, Milton Cottages, Finsbury, Kent.

N.B.—The whole of the amount paid for shares will be considered as working capital.

TIN PLATES.—A COMMISSION AGENT, who has been

for some years in business in the city of London, and who has a first-rate connection amongst Merchants and Buyers of Coke and Charcoal Tin-plates, is desirous of obtaining an AGENCY for THEIR SALE from a respectable manufacturer.

Address "R. A." Messrs. Knight and Foster, stationers, Eastcheap, City.

STEAM-ENGINE FOR SALE.—FOR SALE, by PRIVATE

CONTRACT, a 22½-hp. PUMPING-ENGINE. The engine is a very good one, and is in thorough repair, and will be sold on advantageous terms.—Also, a good 10-ton BOILER, which will be sold either separately or with the engine.

Applications to be made either to Mr. Silas W. Jenkin, civil engineer, Redruth; or to Mr. John Bowden, jun., Liskeard, Cornwall.—Dated Jan. 7, 1850.

STEAM-ENGINE FOR SALE.—TO BE SOLD, BY

PRIVATE CONTRACT, a 33-hp. CYLINDER STEAM-ENGINE, 8 feet stroke, equal beam, with Steam Case, Brass Air Pump, Boiler and Connections, and Capstan and Sails.—Application to be made to Mr. F. Pryor, Bell Cottage, Redruth.

Dated January 2, 1850.

COMBAMARTIN AND NORTH DEVON LEAD AND

SILVER SMELTING COMPANY.

REGISTERED UNDER THE JOINT-STOCK COMPANIES ACT.

The SMELTING-WORKS of the above COMPANY are in ACTIVE OPERATION.—

SAMPLES OF LEAD and SILVER ORES are requested to be forwarded to Captain Cornelius Baydon, Combamartin, near Ilfracombe, North Devon.

Payment for ores by bill, at three months, or cash if required.

Combamartin, Jan. 1, 1850.

THOMAS L. WILLSHIRE, Secretary.

MAESTEG IRON-WORKS.—The ASSIGNEES of the

MORTGAGES, which have removed previous difficulties, are now in a position to TREAT for the SALE of the WORKS, MINERAL LEASES, and PLANT.

Particulars may be obtained by application to Messrs. Sewell and Fox, solicitors, 51, Old Broad-street, London; Messrs. Whittington and Gribble, solicitors; or Edward Mant Miller, Esq., official assignee, Bristol.—Jan. 8, 1850.

MR. EVAN HOPKINS, C.E., F.G.S., &c., CONSULTING

MINING ENGINEER.

BARRINGTON-ROAD, BRISTOL, AND 13, AUSTINFRIARS, CITY.

MINING SHAREHOLDERS, and those who intend to INVEST their CAPITAL in MINES, requiring PERIODICAL ADVICE for their government, SURVEYING and INSPECTION of any description of MINERAL PROPERTY, may make an ANNUAL ARRANGEMENT, on moderate terms, on application (by letter) to Mr. HOPKINS.

MINE CAPTAINS and MINING ENGINEERS receive INSTRUCTION "How to Observe Mineral Property," as usual, by letter.

N.B.—All communications considered as private and confidential.

* * * E. H. begs to return his thanks for the very kind expressions of confidence conveyed in the letters of those who have been guided by his advice during last year in England and on the continent, and the important benefit derived therefrom. He trusts it will continue to prove equally beneficial to all legitimate mines and miners.

MR. T. A. READWIN, MINING OFFICES,

2, WINCHESTER-BUILDINGS, OLD BROAD-STREET, LONDON.

MR. H. B. RYE, has BUSINESS to transact, both as BUYER

and SELLER in all the leading MINES in Cornwall, Devon, and Wales.

For particulars, apply at his office, 77, Old Broad-street, City.

MR. C. S. RICHARDSON, CIVIL ENGINEER, LAND

AND MINING SURVEYOR.

No. 15, OLD BROAD-STREET, LONDON.

ANGLO-MEXICAN MINT OFFICE, No. 5, Broad-street-

buildings, January 8, 1850.—The directors of the ANGLO-MEXICAN MINT COMPANY beg leave to notify to the shareholders that a DIVIDEND will be PAYABLE at the office, as above, on and after

Transactions of Scientific Bodies.

MEETINGS DURING THE ENSUING WEEK.

THIS DAY	Westminster Medical—V, Saville-row	8 P.M.
MONDAY	Geographical—3, Waterloo-place	7 P.M.
	Chemical—149, Strand	8 P.M.
	Medical—2, Bell-court, Fleet-street	8 P.M.
TUESDAY	Linnean—Soho-square	8 P.M.
	Horticultural—21, Regent-street	8 P.M.
	Civil Engineers—25, Great George-street	8 P.M.
WEDNESDAY	Society of Arts—Adolphus	8 P.M.
	Microscopical—21, Regent-street	8 P.M.
THURSDAY	Antiquaries—Somerset-house	8 P.M.
	Royal—Somerset-house	8 P.M.
FRIDAY	Royal Institution—Albion-street	8 P.M.
SATURDAY	Asiatic—5, New Burlington-street	2 P.M.
	Royal Botanic—Inner Circle, Regent's Park	8 P.M.

INSTITUTION OF CIVIL ENGINEERS.

JANUARY 8.—WILLIAM CURTIS, Esq. (President), in the Chair.

The proceedings of the evening were commenced by an address from the President, on taking the chair for the first time after his election. After thanking the members for the honour conferred on him, and modestly attributing his election to the fortuitous circumstance of his being "the senior vice-president in duration of office," rather than to any peculiar fitness on his part, he proceeded to direct attention to some matters relating to the internal policy of the institution, and proposed that the evening meetings should terminate at half-past nine o'clock, in order to afford an opportunity for the members and visitors to assemble in the library, and to obtain those personal introductions to each other, which constitute one of the great advantages of all societies. He then announced that the council had, with great pleasure, acceded to the recommendation of the last annual general meeting, and had invited Mr. Walker, Sir J. Rennie, and Mr. Field, the past presidents, to take their seats at the council table, in the council-room, and in the theatre, as "honorary councillors," and that in future all those members who should fill the posts of vice-president and president consecutively, holding the latter position for two years, should be considered "honorary councillors"—expressing a hope that the past presidents might long be spared to continue that assistance from which the institution had already reaped so much advantage. He then announced that, as the representative of the institution, he had been nominated a member of the Royal Commission, for the promotion of the Exhibition of the Works of Industry of all Nations, under the auspices of H.R.H. the Prince Albert, and requested the aid and cordial concurrence of all the members in that "real Peace Congress." He then noticed some of the principal engineering works which had been terminated, or had made great progress, during the past years—commencing with the tubular bridges across the River Conway and the Menai Straits, which he designated as "pre-eminent for the boldness of the conception, the scientific simplicity of the design, and the difficulty of the execution." He then proceeded thus:—"In tracing the original idea of the most advantageous disposition of a certain amount of material, in a tubular form; the more definite conception of a hollow beam, to permit the passage and support the weight of an engine and train; the experiments for determining the proper distribution of the material, to prevent compression or disruption; the arrangements for the construction and building up these gigantic masses of material; the means of floating them to their situations, and of raising them to their ultimate destination, at an elevation of 102 feet above the sea (at high-water of spring tides); we must feel justly proud of possessing among us the man whose comprehensive mind could originate this magnificent design, and so successfully perform a portion of the work, as to leave no doubt of its ultimate accomplishment. The world already duly appreciates this great undertaking, and we should not be behind hand in testifying our estimate of the bold conception of Mr. Robert Stephenson, in the original idea, his professional skill in the design and execution, his care and caution in availing himself of the talents and experience of Mr. W. Fairbairn and Mr. Eaton Hodgkinson, whose scientific investigations respecting the strength of cast-iron are so well known to the world, and so highly appreciated by our profession, and his entrusting the general construction and elevation to Mr. Frank Forster and Mr. Edwin Clarke. Upon the merits of all these gentlemen, we may look with pardonable pride and partiality—their labours speak for themselves."

The advantages which must result from the more general use of wrought-iron, were then alluded to, and it was announced that the commission appointed in 1847, for the purpose of examining into the forms and strengths of iron beams in railway structures, had enunciated the opinion, "that any legislative enactments, with respect to the forms and proportions of the iron structures employed therein, would be highly inexpedient."

The harbours of refuge now constructing at Dover, and in the Channel Islands, by Mr. Walker, at Portland and Holyhead by Mr. Rendel, the docks at Leith, and Grimsby, also by the latter gentleman; the lighthouses at the Bishop's Rock, by Mr. Walker, and at the Skerries, by Mr. Alan Stevenson, were noticed with great commendation, as most important works, admirably designed and executed.

Details were then given of the steam-vessels, constructed for the Holyhead, the Folkestone, and several other stations, in which the engines of Messrs. Maudslays and Field, Millar, Penn, Seaward, Rennie, Forrester, and others, had been well allied to the vessels built by Messrs. Scott, Russell, Miller, Mare, Wigram, Laird, Vernon, Thompson, &c., and had enabled a speed of from 16 to 18 miles per hour to be attained, and in conjunction with the railways, the journey between London and Dublin to be performed in 11 hours—and that between London and Paris to be accomplished in 8½ hours, giving a death-blow to the onerous system of passports.

The large iron pontoon built by Messrs. E. B. Wilson and Co. (of Leeds) with a deck area of 20,000 square feet, to serve as a floating landing-stage, at New Holland, rendering the trains of the Manchester, Sheffield, and Lincolnshire Railway, independent of the tides and of the muddy shores of the Humber, was described, and the floating landing-stage previously constructed at Liverpool by the president, with a deck area of upwards of 40,000 square feet, was cursorily noticed, and an account of it was promised to the institution.

The railway system of the country was next commented on; and it was stated that there were now nearly 5500 miles of railway completed in Great Britain, at a cost of 220,000,000 sterling, derived from private sources, and expended within the realm, encouraging, in a remarkable degree, productive industry of all kinds, and inducing a revolution in all mercantile transactions and social relations. The example of England was noticed, in boldly abandoning the finest roads, and adopting throughout the length and breadth of the land a network of iron ways, over which, by the aid of steam, passengers and merchandise could be conveyed with a velocity which, at its original proposition, was deemed worse than visionary; which, first filling the continent with amazement, eventually compelled imitation, and thus would ultimately introduce wants, and consequently civilization, to the most remote corners of the world. "If (continued the president) this be true, we are naturally led to inquire who were the authors of this great revolution? what minds conceived, and what energies executed these vast projects? The reply, gentlemen, must spring spontaneously from you all—the Civil and Mechanical Engineers have been the great actors in this most interesting chapter of the social history of our country." The junior members of the profession were then addressed as to the opening now offered for the exhibition of their talents, in the various subjects connected with the sanitary question; and, *ad hoc*, of the establishment of abattoirs, it was suggested that the railways afforded great facilities for bringing up large quantities of animal food ready for sale, instead of transporting living animals to be killed in a crowded city, and introducing noxious and unhealthy trades. If this system were adopted, the general prices would be equalized, and all parties must be great gainers by the plan.

The address then concluded, by directing the attention of railway companies to the necessity of securing the highest engineering talent for the improvement of the mechanical and commercial working of the lines, and the necessity of setting at rest the question of "depreciation"—a desideratum which was felt to be of almost vital importance to railways, as an investment.

The address was received with great applause, and was unanimously ordered to be printed and circulated.

The discussion on Colonel Lloyd's paper, "On the proposed Ship Canal across the Isthmus of Panama," was renewed and carried on with much spirit, in the course of which Mr. Evan Hopkins entered into some very interesting particulars respecting the country, with which he is well acquainted.

The papers to be read at the meeting of January 15, were announced to be "A Description of the Blackfriars Landing Pier," by F. Lawrence, and "Description of a Timber Bridge on the Line of the Lynn and Ely Railway," by J. S. Valentine, M. Inst. C.E.

ORIENTAL REWARD OF MERIT.—It will be recollected, that some time since the Egyptian frigate, *Sharkie*, was brought to this country to be fitted with engines, &c.; we now learn that Hafiz Bey, the commodore, had been sent to the White Nile—i.e., to banishment, which was speedily followed by his murder, as customary in such cases. The alleged ground of this, and of Bey's degradation, is the long time that the *Sharkie* was detained in England to have her engines fitted, the expenses consequent thereon, &c. The punishment is most unjust; for neither the Egyptians nor the engineers who fitted the engines were able to dispatch the work in the time required, owing to the great pressure of engineering work in England at the time the ship was here.

ILL-REWARDED TOIL.—The fly-shuttle was invented by John Kay, who in consequence, fled for safety to France; the spinning-jenny, &c., by Hargreave, at Stanhill, near Blackburn, who, in consequence, was driven to Nottingham, and died in poverty; the power-loom by Cartwright, who got 10,000l. from Parliament for 10,000l. expenses, and ten years' labour; the mule, by Crompton, who got 5000l. for 5000l. expenses, and seven years' labour. Had they been wholesale butchers, they might have obtained peage and pension.

ANALYSES OF CAST-IRON.

Mr. F. C. Wrightson, of Birmingham, has communicated to the *Chemical Gazette* an interesting paper on this subject, of which the following is an abstract:—The effect of phosphorus, in producing what is termed cold short-iron, has long been admitted; but that the use of hot blast occasioned an increase of phosphorus, the author thinks has never been suspected—at all events, never announced. To elucidate this point, and also of furnishing more complete analyses of cast-iron than had yet been done, Mr. Wrightson undertook a series of experiments, thus described:—"The specimens were easily broken to small pieces in a steel mortar. In one portion of from 20 to 30 grs. the sulphur and phosphorus were determined. In a second quantity, all the other constituents were determined, except the carbon. On being treated with HCl and warmed, the iron is quickly acted on, and in a few hours dissolved, leaving black flakes and particles floating in the liquid. These were collected on a filter, previously dried at 212°, and weighed. After well washing, until no trace of HCl remained, the filter was again dried and weighed. The increase was carbon principally, with small quantities of silicates of oxide of iron, lime, &c., and in the numbers VII and VIII, iron in an equivalent proportion to the carbon. In these latter, as also in the numbers I and III, the silica, iron, &c., of the substance separated by the filter were determined by fusing it with nitrate of potash mixed with twice its weight of carbonate of soda; the iron, &c., separated in the usual manner, gave the carbon by loss. This was afterwards verified in two instances by a direct determination of the carbon in a combustion tube. The iron, &c., separated in the above manner, was added to that obtained from the solution. The carbon was designated *b*, and being deducted from the entire quantity found in the iron by the method to be detailed, gave the quantity of carbon designated *a* for the reason before named. The filtered liquid and washings, evaporated to dryness and again treated with acid and water, usually left a minute portion of silica, which was separated, weighed, and added to the former quantity. A current of sulphuretted hydrogen being passed through a small quantity of the solution, it in no case gave any other than a milk-white precipitate of sulphur. After being carefully freed from this, and from SH, it was returned to the main solution, NO₃ added, and boiled until all the iron was peroxidized, and ammonia added gradually, until the solution only faintly reddened litmus, and nearly all the iron was precipitated. A little neutral benzoate of ammonia separated the last portions of the peroxide of iron. The precipitate, after well washing, was dried, ignited, weighed, and examined for manganese by fusion with nitrate and carbonate of potash; for chrome and alumina by dissolving in ClH, and precipitating with caustic potash in excess; only minute traces of alumina were occasionally found in the potash. But the peroxide had, in one or two instances, to be re-dissolved, and the manganese separated afresh. This occurred when ammonia had been added to the solution in excess, and a few drops of HCl again added, which were not sufficient to neutralise or acidify the whole of the solution, which from being very bulky required care in neutralising. When the entire solution, after attaining the requisite degree of acidity, was transferred from one vessel to another, so as to obtain a uniform mixture, then no trace of manganese was found with the iron. From the amount of peroxide the per centage of iron was calculated. Before proceeding to separate the manganese, the solution and washings were evaporated to dryness, and the salts of ammonia driven off by ignition to redness. Thus, I had found, from repeated trials, was absolutely necessary, in order to separate the whole of the manganese by hydro-sulphate of ammonia. After ignition, the residue was always of a brown colour from the peroxide of manganese; a drop or two of HCl dissolved this. Ammonia and hydro-sulphate of ammonia were then added, and the solution allowed to stand for several hours, and gently warmed. The sulphuret of manganese thus separated was converted into sulphate of manganese, from which the per centage of manganese was calculated. In one or two cases, where small quantities of nickel and cobalt were present, these were left as sulphurets on the filter, when the sulphuret of manganese was dissolved by dilute sulphuric acid. The solution, after getting rid of the excess of hydro-sulphate of ammonia, was neutralised, and oxalate of ammonia added. The lime thus separated was converted into carbonate, and from it the proportion of calcium deduced. A drop or two of the solution, with phosphate of soda, occasionally indicated very minute traces of magnesia; these were overlooked. After separating the lime, the solution was evaporated to dryness, ignited in a platinum capsule, and the residue, consisting of the alkaline chlorides, weighed; a few drops of solution of bi-chloride of platinum being added to the moistened salts, the potash was separated (when sufficient in quantity to weigh) in the usual manner; the weight of the chloride of potassium calculated, and deducted from the weight of the mixed chlorides; the loss gave the weight of the chloride of sodium." Further delicate experiments were resorted to, for the purpose of determining the quantity of sulphur, phosphorus, carbon, and nitrogen; the traces of ammonia were so minute, as to render it questionable whether they might not have been obtained from the atmosphere of the laboratory. From eight of a numerous variety of experiments on the iron ores of South Staffordshire, he found the difference in the per centage of phosphorus in hot and cold blast iron to be as follows:—

	I.	II.	III.	IV.	V.	VI.	VII.	VIII.
Cold blast	0.47	0.41	0.31	0.20	0.21	0.36	0.03	0.46
Hot blast	0.51	0.53	0.50	0.71	0.54	—	0.07	0.40

The specimens of iron ore were from the Level Iron-Works, near Dudley, belonging to Lord Ward, to whose agent, Mr. R. Smith, he expresses his acknowledgments for the trouble and expense incurred in forwarding the investigations; and observes that, if the ironmasters as a body exhibited the same degree of interest in the improvement of their manufacture, there would be such changes introduced as would prove of great national benefit; but at present quantity is the object, quality altogether beside the question.

METHOD OF PROTECTING IRON FROM THE OXIDIZING INFLUENCE OF THE ATMOSPHERE.

In the Exposition of Works of Art and Manufacture at Paris, there were exhibited numerous articles manufactured in iron, covered with a kind of transparent vitreous coating, completely spread over the surface of the metal, like a varnish, and capable of affording a perfect protection against the action of the air, or any other oxidizing agent. This appears to be an invention susceptible of many useful applications; for, whether the iron be in the state of a rolled plate or bar, or drawn into tube; whether it be cast into water pipes or into articles of the most elaborate form and design, as vases, and other ornamental works, it can be equally well endowed with this protective coating—it is also a matter of indifference whether the article be made of forge or cast-iron. The following is stated to be the process employed in imparting to the iron the vitreous state:—Firstly, the object, whatever its shape may be, is thoroughly cleaned by dilute acid, which serves to remove, from the metallic surface, grease, dirt, and every trace of oxide; this is important, for, if any foreign matter remain upon the surface, the perfect adherence of the fused glass will be effectually prevented, when that part of the operation is reached—after the action of the dilute acid, the work is to be well washed and then dried; when perfectly dry, it must be brushed over with a tolerably strong solution of gum-arabic, which may be applied by means of a camel-hair brush. Over the whole extent of the gummed surface, powdered glass, of a peculiar kind, is then sifted, and care must be taken to cover every part of the surface with this powder, otherwise the vitreous coating will be imperfect when the operations are completed. When thus prepared, the work is introduced into a furnace or retort, heated to 100° or 150° centigrade; and, when thoroughly dry, it is removed to another furnace, where it is brought to a cherry-red heat; the vitreous matter, which adhered to the gummed surface of the metal, now undergoes fusion—the progress of this stage of the process is ascertained by looking through a small opening (contrived for this purpose) into the heated chamber. When the fusion is complete, and the glass seems to have flowed over the whole of the surface, the article is removed from the furnace and placed in a close chamber, from which the air is entirely excluded—here it is kept until it has cooled down to the temperature of the atmosphere. The vitreous compound, applied to the surface of the metal, consists of the following substances:—Powdered flint glass, 180 parts; carbonate of soda, 204 parts; boric acid, 12 parts. These must be melted together in a "glass pot," and a fusible glass will be the result; when cold, this must be pounded with care, so that it may be reduced to a powder, sufficiently fine to pass through a silk sieve. When thus prepared, it is ready to be applied to the surface of the iron, according to the method described above. If, after the first process, the coating of vitrified matter on the metal should prove not to be quite perfect, the manipulation must be repeated, a second coat of powdered glass being applied in the same manner as the first. It is, above all things, necessary that the vitreous matter which forms the coating should be quite free from foreign matter; for, if this be not the case, or if the surface of the object to be coated be oxidized or greasy, the coating of glass will not adhere, and the result of the operation will be, consequently, very imperfect. It is possible, by modifying this process, not only to endow the surface of any article made of iron with a colourless vitreous varnish or glaze; but, as glasses of different colours may be used with equal ease, an effect resembling enamel may be produced; and, as vitreous compounds of great fusibility may also be produced by merely varying the proportions or character of their constituents, it appears probable that this process may be applicable to works in other metals besides iron.—*Newton's London Journal*.

VICISSITUDES OF MINING.—The late Dudley Fereday was the son of the great Staffordshire ironmaster, Samuel Fereday, who is said to have been at first a common collier, but from his great knowledge of mining obtained at one time a very large property, and lived at a farm called Ettinghall Park, near Sedgley. He gave a great feast to all the colliers in the district when the peace was proclaimed in 1815, and was said, at that time, to be worth 20,000l. a-year. He afterwards fell into misfortunes, and died an unceremonious bankrupt in France, where he had undertaken the management of some iron-works. Samuel Fereday left two daughters (who are wives of the owners of large fortunes) and one son, Dudley, who eventually acquired considerable property, and, among other bequests, has manifestly devoted 20,000l. to found four fellowships at Magdalen College, Oxford.

PERNANSE SERPENTINE MARBLE WORKS.—We understand that the first Malachite Vase ever made in England was last week executed at this establishment. The stone was imported from South Australia, is of a bright green colour, and splendidly variegated. The vase is beautifully turned out of hand, and now the property of W. Williams, Esq., of Scorrir House.—*Pernanase Jour.*

PLANS FOR COMMUNICATING WITH SIR JOHN FRANKLIN.—The Woolwich correspondent of the *Times*, after describing the great preparation made for the *Enterprise* and *Investigator*, thus describes an experiment which took place, on Wednesday last:—"At the principal entrance of the dockyard, in the presence of Capt. Superintendent Austin, C.B., Capt. Washington, Capt. Collinson, G.B., Commander McClure, Lieut. Robertson, R.N., Capt. Stothard, Royal Engineers, and a number of naval and military officers, a plan was submitted by Mr. G. Shepherd, C.E., for sending despatches to a great extent over the country, in the vicinity of the North Pole. The plan is very simple, and could not fail to be effective, as it merely consists in sending up a small balloon, to which is attached a slow match about a foot in length, and round the slow match several hundred pieces of coloured paper attached by a thread, surrounding about 100 of the pieces of paper in each packet. The experiment commenced by inflating the balloon at the end of the gas tube, in the window of the office of the inspectors of police; but there was considerable time occupied in filling the balloon, which was only about four feet high, owing to its being made of oiled paper, parts of which were porous. It was at last inflated, but not sufficiently full to carry up the 400 papers and slow match attached to it; the result was, that 300 were cut off by Dr. Anderson, of the *Enterprise*, and on the slow match being lighted, the balloon ascended admirably, proceeding at a considerable altitude in the direction of Woolwich Common and Eltham at a quick pace, on entering the upper current, there being scarcely a breath of air felt on the ground at the time. The 100 pieces of paper sent up were each 5 in. long by 2 in. broad, all of blue, red, yellow, and various shades of brilliant colours, without any white amongst them, as the latter colour would be comparatively useless on the snows of the northern regions. Capt. Collinson expressed an earnest desire that any person or persons who may find any of the papers after they fall from the balloon, will communicate the time and place where they were found, to the superintendent, or at the dockyard. The balloon was sent up at 11.10 o'clock a.m. It is said that 150 similar or larger balloons will be supplied to each of the vessels of the searching expedition, with a supply of sulphuric acid and zinc to generate gas for inflating them. As it would take considerable time to write on 500 or 700 of these aerial despatches, as were exhibited on the slow matches, and writing-ink on such soft description of paper might soon be obliterated, a small hand-press, with a moderate quantity of legible type, would be a very desirable addition to each of the vessels, and, with a few reams of coloured paper, would not entail a great additional expense to the Lords of the Admiralty, who have so liberally fitted out the expedition with every description of stores, both for the searching expedition, and the missing expedition, should the latter be met with. Had the plan submitted now been thought of before the departure of Sir John Franklin's expedition, some of the papers must have been met with, as the high elevation to which they are carried before they are detached would carry them, during a strong breeze, over a vast extent of country, and even if they fell in the sea, or on pieces of floating ice, it would be a considerable time before they were all destroyed, and many chances would occur of some of them being found, if not by whalers, by the Esquimaux."

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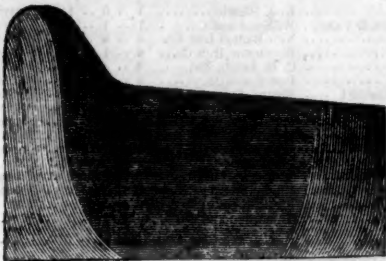
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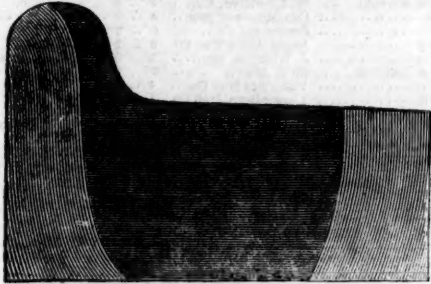
RAILWAY TYRE.—SECTION No. 1, HALF SIZE.



The middle, or wearing, part of this tyre is composed of crystalline charcoal iron, the hardest and soundest iron made. The outward edges are made from a mixture of India charcoal pig with the toughest fibrous iron—the whole made upon an improved principle into one homogenous mass. These charcoal tyres are warranted better and more durable than any tyres made in England.

Price—£15 per ton net at the works, up to 3½ cwt. each.

RAILWAY TYRE.—SECTION No. 2, HALF SIZE.



The middle, or wearing, part of this tyre is composed of the best refined crystalline puddled iron.

The outward edges are of the best No. 3 fibrous iron, and put together upon an improved principle into one homogenous mass.

These tyres are warranted quite equal to any made in Staffordshire.

Price—£10 10s. per ton net at the works, up to 3½ cwt. each.

BEST STAFFORDSHIRE TYRES—£3 10s. per ton at the works, up to 3½ cwt. each.

Fig. 1.

SECTION OF BRIGG'S PATENT COMPOUND AXLE.

Scale ½ inch to a foot: parallel axle.

Price—£14 per ton net at the works.

Fig. 2.

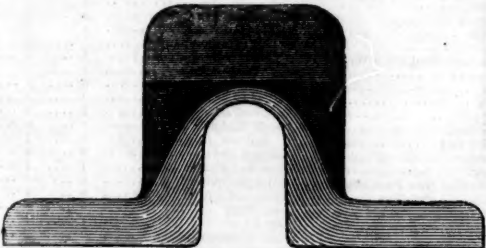
SECTION OF BRIGG'S PATENT COMPOUND AXLE.

Showing the extent to which the internal bar is welded solid at each end, drawn down in the middle half an inch.

Price—£15 per ton net at the works.

PATENT ANTILAMINATING CHARCOAL RAIL.—SECTION No. 1, HALF SIZE.

Price—£10 per ton net at the works.



Patent Antilaminating Rails, made from the same quality as the best S & iron.

Price—£7 10s. per ton net at the works.

The upper, or wearing, part of these two sections of rails is made from antilaminating charcoal iron, much harder than any other iron, perfectly free from lamina. The under, or fibrous, part from best No. 3 puddled iron.

PATENT ANTILAMINATING CHARCOAL RAIL.—SECTION No. 2, HALF SIZE.

Price—£10 per ton net at the works.



Patent Antilaminating Rails, made from the same quality as the best S & iron.

Price—£7 10s. per ton net at the works.

Rails of the same sections are made from puddled iron, quite free from lamina in the wearing part, but soft and less durable than charcoal rails. This principle is applicable to any kind of rails.

I beg to inform the railway public, that the machinery for testing the strength of axles, and the strength and soundness of the tyres, is now ready; and I offer it to the public without any charge for its use, to try any one's make of axles and tyres they may think proper. A machine has been designed, and is now making by Messrs. Fox, Henderson, and Co., for proving the quality and durability of tyres and rails by actual wear and tear, the same as when at work on a railway, at any speed you like. The name of the designer is, I trust, a sufficient guarantee for its efficiency; in fact, it will be so true a test, that it must prove satisfactory to the most fastidious mind; and, so soon as it is completed, it shall be offered to the public, on the same terms as the testing machine above-mentioned.

Shrubbery Iron-Works, Wolverhampton. G. B. THORNEYCROFT.

FOREIGN INTELLIGENCE.

The Royal Steam-Packet Company's ship, *Acon*, arrived at Southampton yesterday morning, from which we learn that treasure, to the value of \$728,195, was shipped at Panama on the 24th November last, for conveyance across the Isthmus, and transmission to England. The *Acon* has brought on freight to merchants' account, 39,870*l.*; gold coin, 8083*l.*; gold dust, 106,377*l.*; silver in bars, 80,000*l.*; British coin, 684*l.*; platinum, 600*l.*; and 41,650 fr.—the total value of specie being 244,544*l.* sterling. The accounts from Valparaiso extend to October 30th. The steamer, *New Granada*, arrived at that port from the northward on the 25th, with specie, value \$339,504, in silver from Copiapo, and gold dust from San Francisco. The Valparaiso papers are much occupied with the news from California. The markets in Valparaiso were brisk; quicksilver was plentiful, at \$100 to \$115; copper was flat, at 14½ reals, on board; iron dull, and stocks heavy, at \$1 75 c.

A railway company had been organised at Copiapo, with a capital of \$800,000, in \$50 shares—all of which were subscribed by resident natives, with the exception of \$150,000 by Messrs. Wheelwright and Edward. The line is intended to run from Copiapo to Caldera, a distance of 48 English miles, with a gradual ascent of 1075 ft., and one short inclined plane, having no bridge on the whole line. The directors had entered into an arrangement with Mr. John Mouat, who was to construct the line without any delay.

By this arrival, we have news from Port Philip, Australia, to the 19th Sept. The season just terminated has been highly favourable to the wool growers. Emigrants were much in request, and high wages offered.

JAMAICA, DEC. 17.—The hidden resources of the island are the subject of a long article in the *Kingston Dispatch*, which says:—"An American company, we hear, have taken the lease of Mount Vernon, and subscribed \$1,000,000 to work the copper mines. Either the same, or another American company, says a common report, are about embarking in the cultivation of cotton in Jamaica. We hope that both accounts are true, and attribute this flash of prosperous industry to the steamers on their way between New York and Chagres—so that even Jamaica profits by the discovery of Californian gold."

CALIFORNIA.—Advices have been received, via New York, to the 16th Nov. The amount of gold was increasing, and considerable quantities were expected to be sent to the United States during the winter months. Provisions were scarce, and prices had advanced to \$40 for flour and \$60 per barrel for pork, wholesale. A great many ships had been despatched to Chili, the Sandwich Islands, and the Australian colonies for provisions, taking with them the precious dust to pay for their purchases; the rates of wages to captains were \$500, mates \$300, and seamen \$100 per month; these exorbitant wages had drawn many ships and men from the whaling trade. The number of inhabitants in California had increased to 150,000. The steamers already employed in the Pacific require 150,000 tons of coal per annum, and this amount is expected to increase greatly. The mail was left at Panama in consequence of the great difficulty in getting it across the Isthmus. The *Empire City* had arrived at New York with \$327,000, and a number of passengers.

A letter, dated New York, Dec. 25, says—"The arrival of the *Empire City* gives us two weeks' later intelligence, a remittance of gold dust valued at half a million of dollars, and a great number of passengers from the mining districts. The accounts are interesting, and, as regards production of gold, full as favourable as those received by previous steamers. The mining season had closed, the rivers were rising, the miners were coming down from the mountains, and San Francisco was rapidly filling up with people, on their way home to the Atlantic States. Within the two weeks that had elapsed previous to the departure of the steamer of the 14th of November, the arrivals at San Francisco, from all parts of the world, have been large, and there appeared to be no falling off in emigration. We have not as yet realised much from our Californian trade. An enormous amount of property has been shipped to San Francisco; but the returns have been comparatively limited. Within the past six weeks property to a greater value has been shipped to that point than the total amount of gold dust received in the United States from California. We have sent out nearly as much coin to San Francisco as we have received from them in gold dust. It will thus be seen that we are out of pocket to a large amount, and unless gold comes along faster than it has thus far, and the shipments of specie and produce continue to California at the rate realised up to this time, it will be several years before the trade will begin to pay, and the balance be in our favour."

The *Alta California* states that—"The rainy season had commenced in California; the streams in the mining country were beginning to swell, and the miners would soon be compelled to betake themselves to winter quarters. The yield of gold this year is not expected greatly to exceed the last, which was estimated at about \$8,000,000. The overland train, which left the United States last spring and summer, across the mountains, had all arrived safe in California. They were subjected to many privations and hardships, but met their fate with heroic fortitude."

DUNN'S IMPROVED MODE OF REMOVING RAILWAY CARRIAGES FROM ONE LINE TO ANOTHER.—Railway turntables, for removing a carriage from one line of rails to another, are very expensive to lay down, very costly, and very apt to get out of repair; so that the wear and tear, as well as the first cost, is great. Mr. T. Dunn, of the Windsor Bridge Iron Works, Salford, has invented and patented an improved mode of effecting this removal, which dispenses with the circular discs, or turntables, and works without turning the carriage at all. At the point where carriages are required to be transferred from one line of rails to another, there is a grooved tramrail across the lines, and upon a level with them, upon which a sort of cradle traverses on four small wheels or runners. This is the patent traverser, which is usually from 12 to 15 feet in length, so as to receive a carriage of any ordinary length. Its sides would form two parallel rails, in continuation of the permanent ones on the line, but they are 2½ inches above the level of the permanent rails. To each line of rails required, is placed a lever, which, worked by hand, raises the adjacent length of both rails at the end next the tramrail to the level of the traverser; so that this length of rail has thus given to it a temporary incline of 2½ inches in 12 or 15 feet, a very easy gradient, and if by any accident the rail were left so, a train coming either way would be in no danger of being thrown off the line.—When the carriage having ascended the slight incline, is placed on the traverser, it is there fastened by two buttons, and is then easily pushed along over the tramrails, crossing the rails at right angles, till it reaches the line upon which it is to be placed. The lever raises the rails here, the unfastened carriage descends the incline, and thus, without loss of time, or change of direction, the carriage can be removed from any line to any other parallel line at a station. The patentee states, that the advantages of the patent traversers over those in ordinary use are, that there is no expensive gear attached, and they are not liable to get out of order; they are easily cleaned and oiled; the foundations are formed upon the simplest sleepers; the cross tram-rails are upon a level with the permanent rails, leaving no break or recess whatever, and the roads are as firm and steady as the general line. The whole of the gear is simple, strong, and inexpensive, compared with others, and leaving considerable more room in a station than turntables, and at a saving of from 200 to 300 per cent. over turntables; in some cases, of still more amount. We understand that one of these trucks is now working ten lines of rails at the Peterborough station of the Eastern Counties Railway; another at the Salford station, Manchester; and one is working nine lines of rail on the Paris and Lyons Railway. It has also been introduced at many smaller stations throughout the country; and the engineer and directors of the Lancashire and Yorkshire Railway Company have recently decided to work the chief stations at Liverpool and Bradford by two traversers (each working four lines of road), in preference to all other plans submitted. As the plan combines real improvement, with great simplicity, and a considerable saving, we think the subject of sufficient importance to give it all publicity. We believe the ingenious patentee means to exhibit a large model of his apparatus, with rails, carriage, &c., at the Exhibition of the World's Industry, in London, 1851.

RAILWAY OVER THE ISTHMUS OF PANAMA.—The *Journal du Havre* says:—"The charge d'affaires of France, at Bogota, has presented a protest against the rigorous manner in which the French company, formed to establish a railway over the Isthmus of Panama has been dispossessed, to profit of the Aspinwall company, of the concession which it had obtained from the Government of New Granada. He has demanded that the projectors of the company shall be indemnified for the preliminary expenses which they have incurred, amounting to upwards of 80,000*fr.* The Government of New Granada appears inclined to attend to this demand. Negotiations have been lately entered into at Quito, the capital of the republic of the Ecuador, to have important additions made to the commercial treaty of 1843. That country has, for the last three years, imported a great number of articles from Paris."

RAILWAY IN RUSSIA.—A correspondent says—"Notwithstanding all obstacles presented against the Petersburg and Moscow line, this long railway is gradually progressing towards its completion. Part of the line was used in October and November, when the reserve battalions of the Grenadier corps were conveyed by it to the Sosninskish Pristan, a distance of 110 wersts. The number of these troops, including the recruits, amounted to 13,000 men."

RAILWAY CATTLE-MARKETS.—It is proposed, should an Order in Council be passed for abolishing Smithfield market, to establish railway markets and abattoirs at or near the termini of the London and North-Western, Great Western, Eastern Counties, and South-Eastern railways, each market to be connected with the other and the centre of the metropolis by electric telegraph (as in the Octroi system of Paris), to communicate the price of meat and quantities of stock every hour, or as occasion may require.

PROPOSED NEW RAILWAYS.—Surveys are proceeding, and plans have been lodged, for the following new lines:—Forest of Dean Central Railway, North Kent Continuation Railway, and Cambridge and Shepreth Railway.

LONDON AND BRIGHTON RAILWAY.—At the meeting of the directors of this company, held yesterday, it was decided to recommend a dividend of 48s. per 100*l.* of Consolidated Stock for the past half-year, after laying aside 15,000*l.* towards a reserve fund, as notified in their last half-yearly report.

STEAM TO INDIA AND CHINA, VIA EGYPT.—Regular MONTHLY MAIL (steam conveyance) for PASSENGERS and LIGHT GOODS to CEYLON, MADRAS, CALCUTTA, PENANG, SINGAPORE, and HONG-KONG. THE PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY BOOK PASSENGERS and RECEIVE GOODS and PARCELS for the ABOVE PORTS by their steamers—starting from Southampton on the 20th of every month; and from Suez on or about the 10th of the month.

BOMBAY.—Passengers for Bombay can proceed by this company's steamers of the 29th of the month, to Malta, thence to Alexandria by her Majesty's steamers, and from Suez by the Honourable East India Company's steamers.

MEDITERRANEAN.—MALTA.—On the 20th and 29th of every month. CONSTANTINOPLE.—On the 29th of the month. ALEXANDRIA.—On the 30th of the month.

SPAIN AND PORTUGAL.—Vigo, Oporto, Lisbon, Cadiz, and Gibraltar, on the 7th 17th, and 27th of the month.

For plans of the vessels, rates of passage-money, and to secure passages and ship cargo apply at our company's offices, No. 132, Leadenhall-street, London; and 57, High-street, Southampton.

SEA, FIRE, LIFE ASSURANCE OFFICE, CONNECTING THE MINING INTERESTS OF ENGLAND AND WALES. (ESTABLISHED BY ACT OF PARLIAMENT.) 31, CORNHILL, LONDON.

Capital £100,000, in shares of 20*l.* each, to be paid in full on allotment, bearing a guaranteed interest of 5 per cent. in perpetuity (irrespective of further dividends) upon the paid-up capital.

Application for shares to be addressed to the Directors, at the offices of the Society. Marine, fire, and life assurances granted on the most liberal terms. Immediate and deferred annuities granted on terms especially advantageous for investment of capital. By order, AUG. COLLIERIDGE, Managing Director.

SPECIMENS OF THE RATES OF PREMIUM FOR ASSURANCE OF £100.

Age.	With Profits.	Age.	Without Profits.
21	19 3	30	2 14 6
30	2 11 3	40	2 8 1
40	3 8 3	50	3 0 2

The whole of the Profits from the Life Department divided amongst the Policy holders. All Life Policies insurable.—All Life Policies free of stamp duty.

ALFRED BURT, Actuary. *WANTED, AGENTS and MEDICAL REFEREES for the PRINCIPAL TOWNS in the KINGDOM. COUNTY SURVEYORS ALSO REQUIRED.

THE MINING ALMANACK for 1850: compiled and arranged by HENRY ENGLISH, Mining Engineer, &c. Under the special sanction and patronage of H.R.H. PRINCE ALBERT, Lord Warden of the Stannaries, Chief Steward of the Duchy of Cornwall, Devon, &c.—THE SECOND VOLUME will appear early in JANUARY next, with ADDITIONAL TABLES and STATISTICS, connected with the Mining Interests.—Names of subscribers are requested to be addressed to Mr. H. English, 25, Fleet-street.

THE PATENT OFFICE AND DESIGNS REGISTRY No. 210, STRAND, LONDON.

INVENTORS will receive (gratis), on application, the OFFICIAL CIRCULAR OF INFORMATION, detailing the eligible course for PROTECTION OF INVENTIONS and DESIGNS, with Reduced Scale of Fees.

Messrs. F. W. CAMPIN and CO. offer their services, and the benefit of many years experience, in SECURING PATENTS and REGISTRATIONS OF DESIGNS, with due regard to VALIDITY, economy, and dispatch—assisted by scientific men of repute.

Also, in MECHANICAL and ENGINEERING DRAWINGS, whether connected with Patents, Railways, or otherwise, by a staff of first-rate draftsmen. Application personally, or by letter, to F. W. Campin and Co., No. 210, Strand (corner of Essex-street).

LITERARY NOTICE.

Tubular and other Iron Girder Bridges, particularly describing the Britannia and Conway Tubular Bridges, with a Sketch of Iron Bridges, and Illustrations of the Application of Malleable Iron to the Art of Bridge Building. By G. DRYSDALE DENNISEY, C.E. London: John Weale, High Holborn.

This is another volume of the fifth series of 15 vols., each of rudimentary works for beginners, now publishing by Mr. Weale, one of which, the *Dictionary of Terms used by Architects, Engineers, &c.*, we have already noticed. The little work before us fully bears out the encomiums we have felt ourselves bound to pass on the generality of Mr. Weale's publications: it goes through the history of wrought-iron to the purposes of bridge building, from the time when the first was built, in Coalbrook Dale, 70 years since, to the present time, giving the results of the numerous experiments made by Messrs. Fairbairn and Hodgkinson, with a complete description of those chief *descentes* of the age, the Britannia and Conway Bridges. We are glad to find that Mr. Weale, in common with ourselves, and others of our scientific contemporaries, while giving all credit to Mr. Fairbairn for the talent he has displayed, awards to Robert Stephenson the merit of suggesting the erection of such a work. He says:—

"It is seldom that the invention of works of new design and skilful mechanical arrangement is due entirely to one mind, any more than their construction is due to one pair of hands—hence, great difficulty arises in assigning to each contributor his fair share of merit in their production. It must, however, be admitted, that to Mr. Robert Stephenson alone we are, in this instance, indebted for the original suggestion; and, with this admission, we have endeavoured to avoid any attempt to judge of the precise claims of the two eminent men whose joint labours have produced the Conway and the Britannia Tubular Bridges. That these great works owe their design and construction to their joint labours is clearly evident, and, we respectfully submit, amply sufficient to justify the record of the two names of Robert Stephenson and William Fairbairn as an honourable and enduring association."

For month, particularly those intended for any of the learned professions, this series of elementary works will prove of great advantage.

LONDON AND NORTH-WESTERN RAILWAY.—A jury have just made their award for compensation in respect of land required by this company in the construction of their Coventry and Nuneaton line. In the first case the claim was 9578*l.*, and the jury awarded 1850*l.*; in the second case the claim was 6348*l.*, and the jury awarded 1890*l.*

NEWCASTLE AND CARLISLE AND MARYPORT AND CARLISLE RAILWAY.—These lines have just passed out of the hands of the York, Newcastle, and Berwick Company into those of their original directors, and are in good order.

SOUTH STAFFORDSHIRE RAILWAY.—The terms of the lease of this line were finally arranged on Thursday last between the proposed lessee, Mr. M'Clellan, and the directors and deputation from the shareholders assembled. The time is 21 years, the interest for the first year being 2 per cent. on a capital of about 750,000*l.*, 4 per cent. for the ensuing seven years, 4½ for the succeeding six years, and 5 per cent. for the last seven years. There is to be a full guarantee against everything in the shape of depreciation of the value of the property; to same to be provided by a sinking fund created by pre-payment. There seems to be little doubt but the lease will be accepted by the proprietors, the London and North Western and Midland Companies, who are the largest shareholders, being in favour of it. The offer has already improved the value of this property 20 per cent. in a falling market.

TRING, READING, AND BASINGSTOKE RAILWAY.—On Tuesday the Master in Chancery, Richards, proceeded with the winding-up of this company's affairs, and decided that all transferees of the company's scrip were entitled to be placed on the list of contributors, and to share in the surplus assets in respect of the shares transferred to them, in lieu of the original holders, but without affecting, in any degree, the liability of the latter to be held contributors in the discharge of, if any, outstanding claims. The lists were proceeded with on this principle, and settled, and the holders of scrip in this position will be entitled to a dividend of 10s. per share to be declared out of the surplus assets.

NAVIGATION OF THE GANGES.—An iron steam-vessel is now being built by Mr. J. Laird, of Birkenhead, intended for the navigation of the Ganges. She is 200 feet long, and 30 feet beam, and will only draw, when loaded, about two feet of water. The form is that of the canoe, shovel-shaped at both extremities, and the bottom, amidships, without keel, forming an inverted gentle segment of an arch: the centre portion, however, or floor, being nearly flat. The rudder is applied at either end, as necessity requires. The vessel is divided longitudinally into three parts, by tight bulkheads; and traversing these, there are other bulkheads, dividing the whole vessel into 30 water-tight compartments, and adding greatly to her strength. The vessel, which is for the East India Company, will, when finished, be taken to pieces, and sent in a ship to India, to be finally put together.—*Liverpool Chronicle*.

COAL MARKET, LONDON.

PRICE OF COALS PER TON AT THE CLOSE OF THE MARKET.

MONDAY.—Buddle's West Hartley 15 6—Carr's Hartley 15 3—Hastings Hartley 15 3—Hollywell 15 3—North Percy Hartley 15 3—Ord's Redheugh 14—Ravenworth West Hartley 15 3—West Hartley 15 3—Wylam 16 6—Wall's End Brown's 16 6—Clement 15 6—Borth 17—Horton 16 9—Hilda 16 6—Northumberland 16 3—Original Gibson 16 6—Riddell 16 9—Eden Main 17 9—Lambton Primrose 17 6—Bell 17 6—Bradyll 18 6—Bomont 17 9—Hetton 18 9—Haswell 19—Hesleden 17 6—Lambton 18 3—Russell's Hetton 18 3—Stewart's 18 9—Caradoc 17 9—Hough Hall 17 3—Hartlepool 18 6—Kelloe 18 6—South Kelloe 17 3—South Hartlepool 17 6—Thornley 17 6—West Belmont 17 9—West Hetton 17 3—Whitworth 14 6—Adelaide Tees 17 9—West Cowpen 16 9—West Tees 18 6—Cowpen Hartley 15 3—Derwentwater Hartley 15 3—Howard's West Hartlepool 15 3—Tanfield Moor 15 3—Nixon's Merthyr and Cardiff 21—Sidney's Hartley 15 3—Ships at market, 189; sold, 94.

WEDNESDAY.—Hollywell 16 6—Ord's Redheugh 14—Tanfield Moor 15 6—Wylam 16 6—Wall's End Acorn Close 17—Gosforth 17—Hutton 17—Heaton 17—Riddell 16 9—Lambton Primrose 17 6—Bell 17 6—Bradyll 18 3—Belmont 17 9—Hetton 18 9—J. Nassohs 16 6—Keeper 18—Lambton 18 3—North Hetton Lyons 17 6—Russell's Hetton 18 3—Whitwell 16 6—Caradoc 17 9—Kelloe 18 6—Thornley 17 6—Belmont 17 6—West Hetton 17 3—Whitworth 14 6—Cowdon Tees 16 9—Tees 18 6—Ships, 145; sold, 54.

FRIDAY.—Buddle's West Hartley 15 6—Carr's Hartley 15 3—Hollywell 15 3—North Percy Hartley 15 3—Ord's Redheugh 14 6—Ravenworth West Hartley 15 6—Tanfield Moor 15 3—Wylam 16 6—Wall's End Brown's 16 6—Barnston Killingworth 16 6—Horton 17—Hilda 16 9—Lambton Primrose 17 9—Bradyll 18 6—Hetton 19—Hawell 19 6—Hutton 17 6—Jonassohn's 16 6—Lambton 18 6—Stewart's 19—Whitwell 18 6—Caradoc 18—Heugh Hall 17 3—Kelloe 18 3—South Kelloe 17 3—South Hartlepool 17 3—West Belmont 17 9—Whitworth 14 9—Adelaide Tees 18 3—Seymour Tees 16 9—South Durham 17—Tees 18 9—Cowpen Hartley 15 6—Derwentwater Hartley 15 6—West Hartlepool 15 6—Nixon's Merthyr 21—Sidney's Hartley 15 6—Ships, 107; sold, 58.



THE MINING JOURNAL.

Original Correspondence.

IMPROVEMENT IN THE COST BOOK.

SIR.—Your correspondent, "Argus," in last week's Journal, in his letter upon "What is, and what is not, the Cost-book System?" seems to have taken for granted that no alteration, or improvement, in the Cost-book System, as sanctioned by our forefathers, can take place without impairing its validity and legality; and as there can be no doubt your correspondent's remarks allude to a company recently formed, called the West Polgoth Tin Mining Company, allow me, through the medium of your columns, to inform "Argus" of the improvement that has been introduced by that company. Your correspondent is right in stating the liabilities of partners in a mine on the Cost-book System. He is wrong, however, in using the term *shareholders*; strictly speaking, there are no *shareholders*; in such an undertaking the parties are *partners in an adventure*, and it is in consequence of this that the necessity has been obvious for some time that a change was highly desirable, by which parties might obtain an interest in a mine, and yet not be liable beyond a certain extent: and after mature deliberation, the directors of the West Polgoth Tin Mine have started their project; and I invite "Argus's" attention to the alterations that have been made; and then I confidently rely on his candour to say whether it is not strictly the Cost-book System, with a great improvement; and that not only is the improvement perfectly legal, but rendering impossible the case, as put by "Argus" in his letter. The old system is this—Certain persons enter upon an adventure, and sign a cost-book; and, at stated periods, meetings are held, to provide funds to meet current expenses of the undertaking, all parties signing the cost-book (shareholders as "Argus" calls them) being individually liable for the debts of the concern. Now, the objection to this in the present day is the *individual responsibility* attached to each shareholder on signing the cost-book, and yet no person can obtain an interest in such undertaking, except by signing the book, and becoming responsible. Now, what is the alteration the directors of the West Polgoth Company have introduced? The following will explain—The directors have formed themselves into a body as *adventurers* on the Cost-book System; they have adopted the usual rules and regulations, and signed the cost-book, and which the public are invited to inspect. "Argus" must admit that, up to this point, the Cost-book System is strictly adhered to.

Now for the improvement: instead of calling upon the public to come and sign the cost-book, and incur the responsibility, the directors, who are alone liable for all expenses, issue contract notes to the public, to the effect that, on the sum of 5*l.* being paid by instalments, the directors bind themselves to admit the holder thereof to an interest in the adventure to the extent represented by the contract note. This is a perfectly legal contract, and can be enforced by the holder as against the parties issuing the contract notes; but the holder incurs no responsibility, for he is not bound to sign the cost-book until a dividend is declared. But he may do so, if he pleases, and become a shareholder at once; but if he does not, what liability attaches to him?—None. He has not signed the cost-book, and, therefore, not liable for the debts of the undertaking; but he can enforce his rights against the parties issuing the contract note.

The new principle introduced by the West Polgoth Company is, therefore, this—that in lieu of shareholders becoming legally responsible in the concern, they have an *equitable interest created*, until all doubts as to the success of the undertaking is at an end by a dividend being declared. Now, will "Argus" candidly tell me whether he does not think this a great improvement on the old system; and the very improvement, too, that if his Mr. Greenhorn had taken care to have provided for, would have prevented the necessity arising for consigning his directors to a place *betwixt warm and vented*? One word as to the assertion, that no stated capital can be defined for a cost-book mine. This is also provided for. Only 1000 shares are to be issued the first year; this will give a capital of 5000*l.*, which is within the engineer's estimate. If this is more than sufficient, the balance will be either paid to the shareholders as dividend or bonus, or held as a reserve fund. If it is insufficient, then the remaining shares will be issued, which will give 10,000*l.*—a sum amply sufficient for all purposes.—A SHAREHOLDER: Broad-street, Jan. 10.

RELINQUISHING MINE SHARES.

SIR.—From a belief that you and your correspondents are ever ready to give, through your valuable Journal, such information as may be required, to a certain extent, by a "Young Miner," I venture to put the following questions:—If a mine in full operation, being divided into 200 shares, and held by 60 *adventurers*, one of whom (holding five shares) should deliver personally his relinquishment to the "purser, which should be duly entered in the cost-book of the said mine;" but three months after he should make application for the relinquishment shares, and a meeting of *adventurers* should take place, when the question should be put and seconded, "that the said shares should be restored"—which motion might be carried by a majority of the *adventurers* present, but these should only hold 99 shares—is the "law" such to give him a legal right to them; or would any majority—say 199 shares? A YOUNG MINER. Helston, Jan. 9.

ECONOMY IN MINING—LEGITIMATE REQUEST.

SIR.—On looking over your Journal of the 3d inst., I was highly pleased to see Mr. E. Hopkins had also entered the field to contend against those worthless mining reports which show, on the first glance to a practical man, to be nothing more than delusive prospectuses, got up to suit the particular interest of certain parties, which too often prove the utter ruin of others; and I am confident that any well-wisher to the mining community is only doing his duty to the public when he calls their attention to these vague prospectuses. I blame no man for selecting a promising locality for a mine, and getting up a fair prospectus, such as he can come in the field with, and speak out with candour, showing it to be a *bona fide* adventure. The mining districts of Cornwall and Devon need none; time has told their tale. Should the agent be a young beginner, and doubting the public confidence in him, it would be far better for him to call in some three or four old mine agents, of well-known honesty and ability, and let them sign his prospectus, as to their opinion of its being a fair chance for remuneration, and further than this no man is justified in going. Let a party, be he who he may, bring out a prospectus, showing that for a certain outlay the mine would pay 10, 20, or 30 per cent., at once tell him there is no certainty in the affair; but it rests on mere chance. I am quite aware that, in a mine in full working, with levels all open, the agents may make calculations, and come very near as to what ores are in these backs above; but when he attempts to tell me what is beneath, I lose my confidence in him. How many instances are there of the most productive lodes disappearing within a few feet below the level, and where is the man that is capable of seeing through the ground? It is a hidden fact, in an abyss unknown. I would further call the attention of the public to those wild productions; and ask if they end in losing the first outlay, saying nothing of per centage; and I think not. It will be found that some unthought-of obstacle has turned up. A second call is required; but the prospects are cheering. The hidden treasure is just emerged to view; and who can deny them? They still carry on as long as they can devise means to get cash at their command. Then the question comes as to how the money was spent. Do these parties spend it in exploring the mines? I say no; they never contemplated on paying even expenses from the first onset; they never attempted to improve the talents put in their hands; they *rise in grandeur*, and fall in *disgrace*. These things forcibly show the value of Mr. Shepherd's letters on economy in railways, and my remarks on a Cornish gentleman, in your Journal of 15th Dec., offering premiums free to all the world for the best plan for carrying out his work. Were this plan adopted generally, how long would the public have allowed shareholders to be carried in a bag? Notwithstanding our prospects are cheering at this time, we must bear in mind that we have a foreign smelting trade established, and our miners spreading far and wide, and we cannot expect high prices; but I have one consolation in admitting, that competition has proved my best friend.

With regard to Mr. E. Hopkins's remarks, they are very proper ones; but space will not allow me to comment on them, neither do they need it; but his *postscript* is very glaring; it tells the whole tale of these prospectuses, and shows their deceptive origin. It is much to be regretted that other practical parties do not speak out whenever reports come before the public that will not bear the strictest scrutiny. At the request of a friend, I have written to two mine parties within the last month, asking a few questions as to their prospects—one has not answered—the other evaded the question, by saying the shares are all taken up; this will come out in due time. Every man that is connected with mines, or intends so to do, should stand on his guard when he sees a mine coupled with another, such as Wheal Golden and Wheal Rose, Wheal Maria and Virtuous Lady, and Treburgett and Wheal Bawden; the change of names, such as east, west, north, and south, of this and that productive mine, which are often 10 miles distant, look bad. Supposing they were only a quarter of a mile distant, no man should set it down as a fact that it would become a second Wheal Rose, or Wheal Maria. These mines made their large quantities of ores under particular circumstances, which can be seen by most practical men after a mine has been extensively worked.

I will undertake to say that I would call at Wheal Maria, and spend an hour with the labouring miners, and find two-thirds of them agree as to some particular circumstances that caused this large quantity of ore to form at this

point; and the grand secret now is to discover where Nature's laws are again called into action in the same way. I am given to understand that Wheal Maria is not yet found on the west side of the River Tamar, even in South Wheal Josiah, notwithstanding they have all the ground between Wheal Maria and Heigston Down Consols.

Your readers will, I trust, exonerate me from attempting to depreciate the value of any of the before-mentioned mines. I do not for a moment attempt to insinuate to the mining public that these mines are not in valuable ground. Many of them, I unhesitatingly say, are in promising mineral strata; but I think it looks mean in the parties to couple them with productive mines, and only shows a want of confidence as to their mine being what they represent it. I think more of mineral strata than promising lodes. I have many times seen very unpromising lodes when crossing mineral strata, and come in contact with canisters, cross-roads, or other intersections, with elvans and change of strata, prove very productive; and how many promising lodes have I seen worked in strata not mineralised, that have been reported to be the very essence of this or that lode, that have opened to a gulf of hidden treasure.

I am quite willing to admit that mining is reduced to a science, as far as sinking shafts, driving levels, &c., go; but we are very far from attaining that point of science that would enable us to lay down a law showing what the result of any particular mine would be. I am aware that many watchful and thinking men are aided much by observations of what occurs in different mines; but there is still a wide field open to professional and chemical men.

The agriculturists of the nineteenth century are rubbing the gloss off their eyes, and becoming aware that two fields that will grow 60 bushels of wheat per acre (no matter what the distance is), are of nearly the same component parts; and I am not satisfied but these men, on their analysing the strata of (say) Wheal Maria and Great Crinnis, would find them composed of much the same parts. At any rate, I shall not set it down as a law that mining is reduced to a science until some of these agents enter the field with us, and take the lead, pointing out the mineral strata, and their component parts, without attempting to make a grasp at a Wheal Maria, or a Wheal Rose, for their own remuneration. Some one, whether a professional man or a miner I am not aware, has made a lucky hit on West Polgoth; he has there the old Polgoth lodes and Hewas lode, from which the most tin was returned for the same time of any mine in the kingdom. He does not state the amount of dividend Hawas paid from this large return, but he has discovered that Polgoth is making a large profit. Who can doubt this being a very promising set; see its locality and its known mineral strata, being surrounded with productive mines on every side. This, coupled with about the outlay required, would be a fair prospectus to be brought into any market; and none could object to it, unless it was found on minute inspection to be, as Mr. Hopkins very properly hinted, an intersection of barren rock; but this cannot be the case, as we are told there is ground enough to employ 800 men for 20 years, which no one will dispute.

I beg to remark to your correspondents on Camborne Consols, and others that have silver ore for sale, that I should prefer selling the ore in its crude state, with all its foreign matters, if it contains much silver, and let the purchaser divest it of these matters as it best suited him. I once dressed a parcel of silver ores, and attempted to divest them of these matters, and sold the crop ore to Bartley and Co. for 8*l.* per ton, and shortly after sold the refuse to Lucas and Shore for 28*l.* per ton. These things should be looked into, where ore contains large portions of silver.—N. ESSON: Treborough, Jan. 9.

STATISTICS OF COPPER, LEAD, AND TIN.

In our last Number we gave a return of the quantity of copper ores raised in Cornwall, and sold by public ticketing during the quarter ended 31st Dec. last, with comparative results with other similar previous periods, and the total return for the year 1849. We now, as always has been our custom, proceed to further details in the sales of copper, lead, and tin ores; and commencing with the Cornish ticketings, as shown last week, they have for the quarter amounted to 36,508 tons, realising the sum of 193,444*l.* 11*s.* 6*d.*, being a decrease over the previous one of only 595 tons, and 1051*l.*; but, as respects the similar period of the year ending June, with a decrease of 23 tons, there is an increase in the receipts of 6276*l.* 16*s.*—a fact which fully supports the congratulatory portion of the remarks we made in our last Number.

The following is the produce of the principal copper mines in Cornwall, sold at public ticketing, with the number of ticketings, number of tons, amount received, and average price per ton:—

Mines.	Ticketings.	Tons.	Amount.	Average price.
Devon Great Consols	3	3799	£25060 3 6	£5 12 0
Carn Brea	3	2455	17625 15 0	7 3 6
United Mines	3	3292	12398 8 0	3 7 6
Par Consols	6	1604	10147 11 6	6 6 6
Fowey Consols	6	1483	9375 5 0	6 6 6
Great Consols	2	1318	7466 8 6	5 11 10
West Wheal Bassett	3	1118	7261 14 6	6 10 11
West Consols	3	990	7288 3 6	7 13 5
Wheal Seton	3	1654	6886 18 0	4 3 3
North Pool	3	1584	6600 8 0	4 3 4
North Roskear	2	960	5171 1 6	5 7 8
South Crook	3	708	4993 19 0	7 1 1
East Wheal Croft, Dud-nance, and Longclose	2	1015	4696 15 0	4 12 6
St. Austrey	3	1355	4539 9 6	3 8 6
Stray Park & Camborne V.	2	1015	4354 4 0	4 5 9
Tywarthale & Nancones	3	1219	4214 6 6	3 9 1
Wheal Friendship	3	552	4160 4 0	7 10 8
South Wheal Frances	3	419	3860 9 6	9 9 0
Trevelick and Barrier	1	421	3591 9 0	7 12 0
Bedford United	3	361	2961 12 6	8 1 5
West Wheal Buller	2	469	2967 12 6	6 2 10
Condarrow	2	469	2881 8 6	6 2 10
Levant	3	550	2769 0 6	5 0 7
Wheal Mary	3	497	2377 2 0	4 15 10
Dolcoath	2	361	2193 16 6	6 1 6
Wheal Comfort	3	952	2168 8 6	2 5 0
Treavean	3	702	2163 5 0	3 1 4
South Piggs	2	380	1641 10 0	4 6 5
Wheal Agate	3	312	1582 12 0	5 1 5
West Wheal Treasury	2	289	1357 19 0	5 7 3
Wellington	2	244	1303 11 6	5 3 3
Marke Valley	2	472	1436 5 6	3 0 10
Treleigh	3	345	1356 5 6	3 18 7
Wheal Tremayne	3	324	1221 14 6	4 17 7
West Wheal Seton	2	186	1087 6 0	5 11 6
Holmbush	2	161	760 6 6	4 14 4
Perran St. George	1	168	747 10 6	4 9 0
Poldice	1	137	672 18 6	4 18 3
West Wheal Jewel	2	127	691 7 0	4 14 1
Trevelick	1	232	860 2 6	3 10 4
South Wheal Fortune	1	98	454 8 0	4 12 7
Wheal Henry	1	98	454 8 0	4 12 7
Wheal Pink	2	115	493 19 6	3 18 8
West Trevelick	2	107	382 6 6	3 11 5
Phoenix	2	38	317 11 0	8 9 4
Wheal Penhale	2	51	296 9 6	5 16 3
South Consols	1	85	275 0 0	3 5 0
South Crook	1	85	275 0 0	3 5 0
Wheal Elen	1	41	238 9 0	5 16 3
Hawk's Point	1	44	214 2 6	4 17 4
Graham and St. Aubyn	1	34	199 15 0	5 14 0
Alfred Consols	1	60	198 14 0	3 3 6
Wheal Vyvyan	1	49	175 0 0	3 11 5
Wheal Maiden	1	39	143 5 0	4 19 6
Wheal Clifford	1	43	129 10 0	3 1 3
Wheal Brans	1	22	129 10 0	2 11 3
Carthow Consols	2	21	124 1 0	5 13 4
St. Aubyn and Grylls	1	22	123 15 0	5 12 6
Prideaux Wood	1	35	105 10 0	3 1 0
Wheal Rose	1	19	104 19 6	5 10 6
Wheal Busy	1	37	103 12 0	2 17 10
Lewis Mines	1	18	81 0 0	4 10 0
Wheal Prudence	1	32	78 8 0	2 9 0
Wheal Venture	1	19	70 5 0	3 7 6
Wheal Prosper	2	33	65 12 6	1 19 9
Wheal Jewel	1	11	35 15 6	5 6 10
Wheal Union	1	7	48 9 6	6 18 6
Tregollan	1	23	46 0 0	2 0 0
Wheal Nancy	1	4	28 0 0	7 0 0
Wheal Oak	1	6	22 15 0	3 6 6
Wheal Fortune	1	2	16 7 0	8 3 6
Great Tolgas	1	6	13 4 0	2 4 0
Pembroke	1	5	13 0 0	2 12 0
Sandry slags and regulus	5	71	137 14 0	1 18 9
Total		Tons 36,508	£193,444 11 6	£5 6 7

The above quantity of Cornish ores were purchased by the following companies as follows:—

Mines Royal Company	Tons 2444	£13,162 6 4
Vivian and Son	7304	40,736 0 10
Freeman and Son	4829	23,501 10 10
Grenfell and Sons	5071	24,212 11 7
Crown Copper Company	316	2,313 0 1
Bima, Williams, and Co.	6108	24,638 11 0
Williams, Foster, and Co.	9289	54,714 7 9
John Schneider and Co.	2087	10,378 10 1
Total	Tons 36,508	£193,444 11 6

The quarterly returns of the sales of lead and tin are unavoidably postponed until our next week's Journal.

THE IRON TRADE.

LIST OF IRON FURNACES IN THE SOUTH WALES COAL-FIELD, OCTOBER, 1849.

Name of Works.	Proprietors.	In.	Out.	Total.	Name of valley where the work is situated.
Cymbrin	R. J. Blewitt	1	0	1	Pontypool Valley
Pentwyn, Glynor, & Varteg	Williams and Co.	1	1	2	Ditto.
Abercynon	New British Iron Co.	3	3	6	Ditto.
Blaenavon	Blaenavon Iron Co.	4	1	5	Ditto.
Pontypool	C. H. Leigh, Esq.	2	1	3	Ditto.
Clydach	Powell and Co.	4	0	4	Ditto.
Nantyglo and Beaufort	Messrs. Bailey	14	0	14	Blaenavon
Coalbrook Vale	Messrs. Brower & Co.	2	0	2	Ditto.
Blaina and Cwm Celyn	Messrs. Crutwell & Co.	3	3	6	Ditto.
Ebbw Vale	Messrs. Darcy & Co.	4	0	4	Ebbw.
Sirhowy	Ditto.	4	1	5	Sirhowy.
Victoria	Ditto.	2	2	4	Ebbw.
Tredegar	Tredegar Iron Co.	7	0	7	Sirhowy.
Rhymney	Rhymney Iron Co.	9	1	10	Rhymney.
Dowlais and Ifor	Sir J. J. Guest & Co.	16	3	19	Ditto.
Pen-y-darret	Thompson and Co.	6	3	9	Ditto.
Plymouth, or Furnace?	A. Hill and Co.	8	0	8	Ditto.
Ynys Fach	W. Crawshaw, Esq.	4	0	4	Ditto.
Cylarthfa	Crawshaw & Co.	10	1	11	Ditto.
Penttyrch	T. Booker, Esq.	1	1	2	Ditto.
Ilwain	Crawshaw & Co.	4	0	4	Aberdare.
Folkestone and Abernethy	Folkestone and Co.	3	1	4	Ditto.
Gadlys	Wayne and Co.	1	0	1	Ditto.
Aberaman	C. Bailey, Esq.	2	0	2	Ditto.
Tondudd	Sir R. Price	1	1	2	Llynfi.
Cefn Cwac	H. Scale, Esq.	1	2	3	Ditto.
Garth	Messrs. Scale and Co.	0	3	3	Ditto.
Maesteg	Maesteg Iron Co.	0	3	3	Ditto.
Cefn Crib	Cambrian Iron Co.	2	2	4	Ditto.
Oakwood and Amwain	W. Llewellyn, Esq.	5	0	5	Ditto.
Cwmavon	Cop. Miners of Eng.	4	0	4	Avon Valley.
Penallt	Jevons and Co.	0	2	2	Neath.
Neath Abbey	Neath Abbey Iron Co.	0	2	2	Ditto.
Onllwyn	J. Williams, Esq.	2	0	2	Swansea.
Millbrook, or Landore	Sir J. Morris	0	2	2	Ditto.
Swansea	Tatylia Iron Co.	4	1	5	Ditto.
Ynyscedwyn	Ynyscedwyn Iron Co.	5	2	7	Ditto.
Banwen	Banwen Company	0	2	2	Ditto.
Trisarran	Marble and Co.	0	2	2	Amman.
Gwaindrith	Walvey and Co.	1	2	3	Ditto.
Amman	—	2	0	2	Ditto.
Total		140	54	203	

LIST OF IRON FURNACES IN THE SOUTH STAFFORDSHIRE AND WORCESTERSHIRE DISTRICTS.—OCTOBER, 1849.

Name of works.	Proprietors.	In.	Out.	Total.
Oldbury	John Davies and Sons	2	0	2
Union	P. Williams and Sons	2	1	3
Ridgacre	Fowler	0	0	0
Crookhay	Thomas Davies	2	0	2
Gold's Hill	Bagnall and Sons	3	0	3
Toll End	Eagle Furnace Company	0	0	0
Old Park	Birmingham Coal Company	0	0	0
Wednesbury Oak	Lloyds, Foster, and Co.	1	1	2
Wellingsworth	P. Williams and Sons	3	0	3
Broadwaters	Haines and Co.	2	1	3
Bentley Heath	Colburn, Groucott, and Co.	2	0	2
Old Birch Hills	Countess of Lichfield	0	4	4
Coltham	P. Williams and Sons	1	0	1
Stow Heath	John Mainwaring	0	0	0
Darlaston	W. Fryer	1	1	2
New Darlaston	Mills and Co.	1	0	1
Dudley Port	Addenbrook and Co.	2	0	2
Ditto	Thomas Morris	1	0	1
Canary	Hopkins	2	0	2
Horsley	Lord Ward	2	0	2
Stoke New	Horsley and Co.*	0	2	2
Prior Fields	E. Creswell and Sons	0	2	2
Deep Fields	H. B. Whitehouse	2	1	3
Capon Field	Benton and Pemberton	2	1	3
Ettingshall	John Bagnall and Sons	2	1	3
Stone Fields (near Bilston)	Thomas Banks and Son	1	1	2
Hall Fields	E. Woolley (now T. W. Vernon)	1	0	1
Bilston	B. Gibbons	1	0	1
Bonnewell	John Parsons	0	2	2
Bilston	Baldwin and Co.	1	1	2
Coseley	George Jones	2	1	3
Millfields	Turley Brothers	1	1	2
Park Fields	W. Riley	3	0	3
Prior Fields	Parkfield Company	3	0	3
New Heath	W. Ward	3	0	3
Oxley End	W. Sparrow	3	2	5
Chillingham	—	2	1	3
Netherton	Chillingham Iron Company	4	0	4
Dudley Wood	M. and W. Grangebrook	1	1	2
Bumble Hole, Netherton Works	British Iron Company	1	3	4
Corncreaves	Ditto	1	1	2
Buttery	Ditto	1	1	2
Eastley's Green	Jones and Oakes	0	0	0
Russell's Hall	Ditto	0	3	3
Dixon's Green	Blackwell and Co.	2	1	3
Windmill End	Joseph Hadden	1	0	1
Withymoor	W. Hadden	1	1	2
Parkhead	Best and Bann	0	2	2
Corbyn's Hall New Furnaces	Evers and Martin	1	0	1
Ditto	Benjamin Bramwell	0	2	2
Leval Iron Works	Galvanised Iron Company	0	4	4
Old Level	Lord Ward	0	3	3
Brettell Lane	John Lyon	1	1	2
Jay's Works	John Wheeley and Co.	0	2	2
Shut End	W. and G. Firmstone	3	0	3
Oak Farm	John Bradley and Co.	4	0	4
Woodslee	Oak Farm Company	0	2	2
Wolverhampton	Bramwell and Co.	2	1	3
New Birch Hills	Dixon and Nove	2	1	3
Old Hill	Chillingham Iron Company	2	0	2
Tipton Green Old Furnaces	George Jones	2	0	2
Darlaston Green	T. and J. Badger	1	0	1
Bloxwich	B. Gibbons, jun.	1	1	2
	David Jones	1	0	1
	W. Fryer	1	0	1
Total.		89	58	147

It was then resolved, that the committee be empowered to carry out the recommendations of Capt. Lean, and that Messrs. Richardson and Snell make a

quity for a small engine, as they may deem advisable, at a monthly rental, and communicate to the committee.

Votes of thanks were then passed to the committee of finance and the chairman, and the meeting broke up.

WHEEL MARY EMMA MINING COMPANY.

At a meeting of adventurers, held at the Bedford Hotel, Tavistock, on the 3d inst., the accounts were examined and passed, showing—Call, 128l.—By balance last account, 562l. 4s. 8d.; November cost, 511l. 10s. 10d.; leaving balance in favour of adventurers, 202l. 9s. 6d.—A call of 2s. 6d. per share was made, and the following report was read:—

Jan 3.—Since the last general meeting of adventurers in November, the engine-shaft has been commenced on the course of the lode below the shallow adit; the lode is about 20 in. wide, and, in sinking the shaft, it has produced the richest tin yet seen in the mine. The shaft is temporarily suspended, in consequence of an increase of water and the very severe weather. The deep adit level has been extended 6 fms. 3 ft. 3 in. on a lode varying from 18 in. to 2 ft. wide, from which has been risen some excellent tin stuff, the best of it from the bottom of the level; the lode in the present end is about 2 ft. wide, composed of peach, prun, capel, spar, and tin, and is of an exceedingly promising appearance; ground is being laid open in this level that will work at low tribute. The 4-ft. wheel, referred to at the last meeting, has been purchased for 55l. It had worked only a few months, and cost 250l. It is intended to drive a set of stamps, and as a pumping-engine. The wheel pit is nearly cleared out, and sufficient stone risen for the walls, which, weather permitting, will be commenced next week.

BWICH CONSOLS.—At a meeting of adventurers held yesterday at the offices of the company—J. HAYWARD, Esq., in the chair—the reports of Captains Middleton and Prince were read, as also the weekly ones of Capt. M. Francis, which were deemed highly satisfactory. A call of 2s. per share was made, payable by two instalments of 1s. each, on 25th inst. and 1st March.

EAST WHEEL ROSE.—At a two-monthly meeting of adventurers, held at the mine, on the 8th inst., the accounts were examined and passed, showing—Balance last account, 2705l. 2s.; silver lead ore sold, 9466l. 17s. 10d.; Cargill adventurers, 139l. 6s. 4d.; ditto water charge, 297l. 14s. 8d.—12,609l. 0s. 10d.—By cost for Sept., 2169l. 12s. 5d.; ditto Oct., 2204l. 11s. 4d.; merchants' bills, 2388l. 10s. 9d.; income tax, 200l.; dues, 624l. 7s. 1d.; ditto Stannaries, 177l. 10s. 9d.; on account of new engine, 250l.; Mr. Treffry's carriage, per railway, 221l. 18s. 11d.; dividend, 15s. per share, 1920l.; leaving a balance in hand of 2662l. 9s. 7d.

SOUTH WHEEL FRANCES.—At a two-monthly meeting of adventurers held at the mine, on the 7th inst., the accounts were examined and passed, showing—Ore sold, October 4, 1347l. 0s. 6d.; ditto, Nov. 1, 1332l. 6s. 7d.; tin sold, 678l. 4s. 11d.; income tax from dues, 64l. 15s. 8d.—3420l. 7s. 8d.—By labour cost, Oct., 639l. 17s. 10d.; ditto, November, 641l. 17s. 1d.; merchants' bills, 708l. 8s. 10d.; dues, 232l. 14s.; leaving profit of 1212l. 14s. 11d., to which add balance last account, 959l. 14s. 8d.—2172l. 9s. 7d., from which deduct dividend of 104l. per share (1240l.), leaves in hand, 932l. 9s. 7d.

WELLINGTON MINES.—At a meeting of adventurers held at the mine on the 9th inst., the accounts were examined and passed, showing—Copper and tin ores sold (less dues), 787l. 11s. 3d.; by labour cost, Sept., 237l. 9s. 4d.; ditto, Oct., 258l. 11s. 9d.; merchants' bills, 138l. 15s. 1d.; leaving profit, 152l. 15s., to which add balance last account, 163l. 16s. 1d., leaves in hand, 318l. 11s. 1d. A dividend of 10s. 6d. per share was declared, leaving a balance of 54l. 3s. 1d.

WHEEL COMFORT.—A meeting of adventurers was held in Wheel Buller account-house, on Friday last, when the accounts for October and November, of which the following is an abstract, were passed, and a dividend of 3s. per share was declared:—By balance from last account, 197l. 8s. 7d.; ores sold, less dues, 1407l. 4s. 8d.—1604l. 12s. 10d.—To cost and merchants' bills, 976l. 11s. 11d.; dividend of 8s. per share, 384l.—1360l. 11s. 11d.; leaving balance in favour of the adventurers, 244l. 0s. 11d.

STRAY PARK AND CAMBORNE VEAN MINING COMPANY.

Sir,—As "knowledge is power," and the manager of the above may not have observed my letter in your Journal, of December 22nd, or as his time may have been too much occupied to reply thereto, I shall be glad if any correspondent will oblige you with the state and prospects of the mines, for the guidance of the "out adventurers" who are not willing to be sacrificed or frightened out of their shares. I have since been informed that upwards of 30,000l. worth of ores have been discovered. Surely, if this be true, we have a right to expect 20s. a share dividend per two months, and present standard should be availed of for that purpose.—FAIR PLAY: Jan. 11.

SOUTH TOLGUS.—The reports from this mine are of the most encouraging nature; at the next sampling, which is expected to take place in the ensuing week, about 230 tons will be ticketed for sale. This having been better dressed than the last parcel, will be of a higher per centage, and realise a proportionate increase in price. The profit on the two months will be about 800l. to 1000l.

RAILROAD IRON FOR PANAMA.—We are pleased to state, that the Rhymney Iron Company are now sending off large cargoes of rails for the railroad across the Isthmus of Panama.—*Monmouthshire Merlin*, of this morning.

QUARRY DRAINED BY A SYPHON.—A novelty in this quarter has been introduced by Mr. Bayne, who lately became lessee of Sudda Quarry, at Manlochy, Invernesshire. Its ample resources have hitherto been unavailable, from the depth and quantity of water, which not only obstructed the workings beyond a limited depth, but also prevented the best quality of rock being obtained. To have drained off the water, either by pumping or gravitation, would have entailed much expense. Availing himself of the facilities afforded by the nature of the locality, Mr. Bayne has succeeded, by the advice and assistance of Mr. Esson, of the Inverness Gas and Water Company, in completely carrying off the water by a siphon of large diameter, and about 200 yards in length, at something like one-sixth of the cost that would have been incurred by either of the other two methods mentioned. "Jack," said one of the quarry-men, "our master's surety daft, he canna think to make the water run up the brae—it's against nature." Jack's companion, has since, however, been disappointed—the quarry has now been emptied.—*Inverness Advertiser*.

Aberdeen.—On Wednesday night last, a diabolical attempt on the life of W. Jenkins, a collier, who, with some others, would work in defiance of the strike at Cadly's and other works. A gun was fired in at the window—the slugs from which lodged in the bed-post, within a few inches of Jenkins's head; 20l. reward is offered for the apprehension of the miscreants.

Pointpool.—T. Donovan fell from the top of the furnace, at the Race work, a height of 40 ft., and fractured his thigh and jaw. It is hoped his life may be saved.

Wheat Mary.—T. Thomas, aged 27 years, was killed on Thursday week, by a piece of ground turning out on him whilst he was at work in the back of the 40 ft. level.

MEETINGS OF COMPANIES DURING THE ENSUING WEEK.

WEDNESDAY.—London and Westminster Bank—offices, at One.
City of London Gas-Light Company—offices, at Two.
THURSDAY.—London Joint-Stock Bank—offices, at Eleven for Twelve.
FRIDAY.—Australasian, Colonial, and General Life Assurance and Annuity Company—offices, at One.

RAILWAY TRAFFIC RETURNS.

Names of Railways.	Length, 1850	Length, 1849	Present actual cost.	Price p. share, 1849	Div. 1849	Traffic Returns, 1849
Aberdeen	57	16	1,000,547	11s	—	£ 612 £ 417
Belfast and Ballymena	37	37	514,968	8s	5	416 391
Birkenhead, Lancashire, & Chesh.	19	19	1,088,804	37	51	789 783
Bolton, Blackburn, & West Yorkh.	14	—	766,384	5s	—	436 304
Bristol and Exeter	85	79	2,550,490	59s 8	—	2979
Cardiff and Merthyr	13	14	5,149,339	61s	3	5632 3501
Chesham and Holyhead	109	84	3,358,217	9s 4	11	1152 1084
Dublin and Drogheda	35	35	778,566	27	—	601 710
Dublin and Kingstown	74	72	395,915	—	—	669 714
Dundee, Perth, & Aberdeen Junc.	59	47	544,554	13s	6	1097 914
East Anglian (Lynn to Ely)	91	67	1,247,446	12	—	711 737
East Lancashire	75	34	2,628,519	12s	5	1643
Eastern Counties and Norfolk	322	295	15,027,069	7s	—	13650 14350
Eastern Union	95	50	1,782,703	4s	—	1644 1182
Edinburgh and Glasgow	57	52	2,923,159	27s	6	3012 3401
Edinburgh and Northern	78	34	2,241,376	10s	2	2520 1777
Glasgow, Paisley, and Ayr	104	74	2,974,330	47s	3	3549 2411
Glasgow, Paisley, & Greenock	23	23	852,846	12s	2	1157 876
Gr. Northern & East Lancashire	143	—	5,138,756	7s	51	2537
Gr. Southern & Western, Ireland	188	110	3,552,289	30s	67	3516 2919
Great Western	230	205	11,867,042	60s	6	15180
Lancaster and Carlisle	90	70	1,476,102	51	14	2883 2007
Lancashire and Yorkshire	220	127	10,068,262	57	52	10715 10467
Liverpool, Crosby, & Southport	13	—	84,455	—	—	75 71
London and North Western	478	428	26,251,635	11s	7	37621 34610
London and Blackwall	5	4	1,299,675	3s	1-12	548 605
London, Brighton, & South Coast	170	162	6,502,690	80s	24	6955 6897
London and South-Western	121	194	7,874,259	62s	9	7429 8142
London and Southampton	14	14	185,729	16	—	143
Manchester, Sheffield, & Lincoln	157	91	6,598,260	16s	9	4975 2892
Midland Company	483	423	15,133,779	24s	51	16893 22564
Midland Great Western (Irish)	50	36	725,332	40s	3	906 852
Monklands	36	—	486,245	—	—	88 3
North British	125	83	3,649,555	10s 11	4	3823 2399
Scottish Central	45	—	1,364,228	14s	7	1080 890
Shrewsbury and Chester	30	23	969,618	3s	—	1401 1659
Shropshire Union	30	—	—	—	—	371
South Devon	57	29	1,909,232	5s	5	1243 1450
South-Eastern	189	159	8,666,067	19s	5	11593 7603
Taff Vale	38	40	879,110	—	7	1726 1360
Tulster	36	36	733,829	45s	—	704 663
Waterford and Limerick	25	—	512,894	—	—	297
West Cornwall	12	12	150,879	9s	3	191 170
Whitehaven Junction	29	—	—	—	—	12563 13112
York, Newcastle, & North York	290	242	6,827,849	17s	7	5315 7358
York and North Midland	280	234	4,983,618	17s	7	—

IMPROVEMENTS IN IRON AND STEEL.

[Abstract of specification of patent granted to Sir Francis Charles Knowles, Bart., of Lovell, in the county of Berks, for improvements in the production and manufacture of iron and steel. Enrolled Jan. 1, 1850.]

This invention, as set forth in the present specification, consists—Firstly, in making malleable iron by a direct process without previous smelting. Secondly, in making steel direct from the ores. Thirdly, in preparing iron ores by a process of cementation in retorts, or kilns, separate from the blast-furnace, previous to their being thereafter melted in the usual manner; and fourthly, in the substitution of certain iron ores as a flux for other metal, instead of the limestone, at present adopted.

This invention is stated to be carried into effect mainly as follows:—The ore, which, in the case of the two first purposes, should be as free from earthy matter as may be, is to be broken into pieces, and placed in retorts, similar to gas retorts, in such manner as to leave interstices for the circulation of the gas. These retorts are set over furnaces, in which fires are to be kept up. Gas-pipes supply gas to these retorts, by means of which the gas (which may be either common or other suitable gas) is caused to circulate amongst the ore, and the process being properly carried out to effect the cementation thereof, it being capable of regulation through the medium of stop-cocks and other appliances.

The cementation having been sufficiently carried on, the reduced ore, if intended for malleable iron, is to be passed to the puddling furnace for manufacture in the usual manner. If it be intended for steel, it is to be allowed to imbibe one per cent. of carbon, and then placed in the crucible and treated in the ordinary wind furnace, &c. But if it be intended for being made into cast-iron, it is to be allowed to imbibe three or four per cent. of carbon. As regards the substitution of iron ores for the ordinary limestone flux, the ore having undergone the above process, is to be roasted, and then mixed with other ores, of such qualities that it shall contain, in the aggregate, much the same constituents as those which are found available in the ordinary limestone flux. The details of this invention are given with much prolixity, and, therefore, the specification, as enrolled, must be resorted to by those who require more than an outline of the invention.

Patent-office and Designs Registry, 210, Strand, Jan. 11.

IRON MASTERS' QUARTERLY MEETINGS.

The first of the quarterly meetings for the South Staffordshire district was held at Wall-sall, on Tuesday last. Few were present, and little business was done. The second took place on Wednesday, at the Swan Hotel, Wolverhampton, and was numerously attended. There were many of the large firms of London and Liverpool represented; and the heads of the principal houses report that they have plenty of orders, that the condition of the trade has very greatly improved during the past few months, and that, upon the whole, matters are looking satisfactory. There are a greater number of forges in blast than there were six months since. On Thursday, the masters assembled at Dec's Royal Hotel, Birmingham; a more numerous and influential meeting has not been held during the past year, and great interest was felt to ascertain the general state of the trade, and future prospects. The concurrent testimony of the principals of all the large establishments gives a highly favourable report of the state of trade. In some few instances an advance on pig iron had been sought, but not obtained. There has been a decided improvement in the demand for manufactured goods from America and the continent, and it is hoped that, ere long, it will extend its influence to the producers of the material, and justify a moderate advance in prices, so much needed both by masters and men. We have been kindly favoured by this morning's post with a proof of an article which will appear in the *Birmingham Journal* of this day, from which we learn that the meeting (wisely, we think) came to the determination not to alter present prices, which, it is believed, will have the effect of checking any undue advance in manufactured goods, and affording more free scope to the operations of the smaller manufacturers. Still, from the extreme abundance of money, and the general improvement in the trade of the country, we may naturally expect an advance in all descriptions of hardware goods. Yesterday the meeting at Stonebridge took place, and to-day the masters meet at Dudley, the result of which we shall give in our next.

MINING IN FRANCE.—The accounts from the iron districts continue satisfactory. Much anxiety prevailed among the ironmasters and coalowners regarding the commercial treaty concluded with Great Britain, as they now find they have been playing a losing game in keeping up enormous prices. The commission appointed by Government respecting the establishment of the electric telegraph throughout France has already made a very favourable report, to be presented to the Legislative Assembly. The system to be adopted is similar to that in use in Prussia, before described in our columns.

The stoppage of the navigation of the Elbe has much hindered the copper and iron works situated in the vicinity of Hamburg, and a deficiency of fuel is apprehended. The German Mining Company are about to re-commence smelting, as they have a tolerable supply of ore on hand.

ASTURIAN MINING COMPANY.—There was a private meeting of the shareholders of this company, in the course of the week, who had paid their call, to consider a report of the directors and liquidators. We understand a proposition was made to bring the affair under the Winding-up Act, to compel the defaulters to pay up. The meeting deferred the consideration of that measure, and agreed to raise a loan, and extended the time for payment of the call till the 24th inst., from which time all shares will be forfeited. A very considerable sum, we are informed, was subscribed at the meeting; but, as our reporter did not obtain permission to be present, we can give no particulars. In the present position of the company, we desire to extend every indulgence to the managers, yet we cannot but express our disappointment that they should revert to the very objectionable system of secrecy, more especially as the undertaking in hand, as we have well assured ourselves, is such that every act of publicity must advance the interest of the shareholders, whereas reserve can only serve to create a reaction from the approach to restored confidence, which the present policy has imparted to those interested in such enterprises. The *Actie* arrived at Plymouth, bringing with her several English furnacemen and puddlers, with their wives and families, who have been discharged from the company's service. The English establishment now remaining at Mieres consists of Mr. J. James, the mining agent, one miner, two engineers, one bricklayer, one moulder, one smelter, one refiner, one blast-furnace keeper, and one labourer; about two hundred Spaniards were still in the employment of the company. It was expected that the Government would shortly suspend the operations. The iron furnaces had been working well, and all difficulties in the make of the iron had been obviated.

CERRO DEL BOTE MINING COMPANY.—The subscription lists for the formation of this company are progressing but slowly; 50,000l. is the capital required, to meet which at present only 22,000l. has been subscribed. The proprietors intend shortly to close the lists, due notice of which will be given by advertisement. The mine is at present paying its cost, although all the works have been stopped; and there is no doubt, if worked with adequate capital, a handsome profit would be realised. The Celestina Mine is still being worked by the Bolanos Company, but it is expected will be abandoned in the course of a few months, as the company is now being wound up.

QUEBEC MINING COMPANY.—The affair at Mica Bay has not turned out so serious as we have been led to expect, from the information we have received on the subject. We fear, however, that the matter will turn out anything but creditable to the Government, who have now, in addition to not paying the just claims of the Indians, committed an unnecessary act of aggression, by sending the chiefs who headed the *enquete* to Toronto Goal, some 600 or 800 miles distant from their own people, although not the slightest disturbance took place; and Mr. Bonner was offered instant repossession, if anything like a settlement was offered. Angus McDonnell, the Scotchman, who is now a first chief of the Indians, under the cognomen of "Shin-gawak," the "Pine," has also been arrested, and it is supposed, from the willingness with which all gave themselves up, that there are some connections in the capital, to whom they look with confidence for the issue of the affair. They were eventually admitted to bail on a charge of misdemeanour, preferred against them by the mining company, for taking forcible possession of their property.

MINING COMPANY OF IRELAND.—On Thursday the following proprietors were unanimously elected to act as directors for the ensuing year:—Edward Atkinson, Francis Barker, M.D., Thomas Bewley, Francis Augustus Codd, James Dawson, Isaac English, James Gray, Robert R. Guinness, Sir Robert John Kane, M.D., James Magee, Edward A. Gibbon, James Murphy, James Perry, Thomas Pim, and William Stephens. Some remarks on the late meeting appear in another column.

WHEAL CONCORD MINING COMPANY.—In the Vice-Chancellor's Court, yesterday, Mr. Bacon mentioned this case, in which a reference had been directed under the Winding-up Act, and asked that the order might be dated as from this day, as it had not been passed and entered.—The Vice-Chancellor granted the application.

METROPOLITAN COMMISSION OF SEWERS.—A special court of the Metropolitan Commissioners of Sewers was held yesterday, Sir J. Barrow in the chair, when Mr. F. Foster was appointed engineer to the commission, at a salary of 1800l. per annum, with an addition of 200l. per annum for cab hire.

CALCULATION OF RAILWAY CASUALTIES.—According to an account, recently published, of railway passengers and railway accidents, it appears that, out of 28,761,895 persons conveyed, 96 individuals lost their lives. If this be a fair average to calculate upon, the risk to life is as 1 in 299,582. By the same rule, a person riding by railway 50 times a year may calculate on being killed once in 6000 years—that is, in a similar period to that of the world's age.

CONVEYANCE OF HER MAJESTY'S MAILS TO AND FROM SYDNEY, NEW SOUTH WALES, &c.—The Lords of the Admiralty, will, on the 22d inst., be ready to receive tenders for the monthly conveyance by steam-vessels of her Majesty's mails to and from Sydney, New South Wales, New Zealand, &c. The tenders must be addressed to the Secretary of the Admiralty, Somerset House.

New Patents.

[From the *Mechanics Magazine* of this day.]

SPECIFICATIONS ENROLLED DURING THE PAST WEEK.

JAMES MCLEERY, of Parkersburgh, Chester County, State of Pennsylvania, U. S. machinist, for certain improvements in the slide valves of steam-engines.—This invention has for its object to render the slide-valves of steam-engines, more especially those of locomotive-engines, more perfect in their action, and consists in constructing them in such manner that they shall continue for a longer time than they now do with their rubbing surfaces in that complete and steam-tight state in which they generally are when delivered from the hands of the engine builder. As these valves and the cylinder-valve facings which they rub against are now constructed, they soon become deeply scratched or grooved in a direction parallel to the line of motion of the valve, and in proportion to the inequalities of surface thus produced, the steam passes through the valve without causing any useful effect upon the piston. It has been commonly supposed that this scratching or grooving is caused by some hard substance introduced into the valve casing, either along with the steam or with water, which finds its way through the steam pipes; but the patentee states that he has ascertained, by frequent and careful observation, that it arises chiefly, if not solely, from metallic particles detached from the valves and valve facings themselves. Hitherto it has been the practice to make the openings from the rubbing surfaces quite sharp, or at right angles with the plane in which the slides move, the consequence of which is, that the edges of these openings soon yield, from want of side support, to the pressure and friction to which they are exposed, and become detached in small portions, which get jammed between the valve and the facing, and thus produce the injurious effects just adverted to, and which it is the purpose of this invention to remedy. The edges or corners, which have been hitherto made at right angles with the rubbing surfaces, are here rounded or flattened, off to such an extent as to be no more liable than other parts of the valve and facing to abrasion.

Claim.—Making the corners or edges of the openings in the slide valves of steam-engines rounded instead of angular, as described.

JAMES ROBINSON, Patterson-street, Stepney, engineer: for improvements in machinery for moving and raising weights.—These improvements consist in certain additions to and modifications of a peculiar construction of ships' windlasses, which was the subject of a patent granted to the same gentleman some years back, in which the rotary motion was communicated to the barrel by means of a nipping plate and lever connected to cross head on the top of the pull post, and actuated by a horizontal shaft worked by hand levers attached to the ends thereof. The present invention has for its object to vary the power communicated to the windlass, by employing a second lever, connected on one side to the nipping lever, and on the other side to the cross head, by adjustable rods, which admit of side leverage being varied. The horizontal rod is provided with slots in the end, in order that the length of the hand levers may be varied, and the power increased or decreased as required. The patentee claims several modifications of the preceding arrangement, as described and illustrated by eleven sheets of drawings.

JOHN GRANTHAM, Liverpool, engineer: for improvements in sheathing ships and vessels.—Mr. Granttham proposes to sheath iron vessels with copper, or other suitable metal, and to prevent galvanic action, by interposing between the vessel's sides and the sheathing another sheathing of wood, or gutta percha, or gutta serena compound. For this purpose, he constructs the vessel with external projecting ribs of a wedge-shape, so as to form dovetailed sides; and in the spaces between the ribs he inserts pieces of wood, or some non-conducting material, which are thereby firmly retained in position. To these he attaches a sheathing of wood, or gutta percha, or its compounds, care being taken when metallic fastenings are employed not to allow them to come into contact with the ribs or sides of the vessels; and it is to this external sheathing that the copper, or metal sheathing, is to be fastened. What it is required to dry the sides of the vessel, and heat them when adhesive materials are used, the patentee proposes to employ a double cylinder of sheet-iron, having a coke-furnace in the bottom, and a fan at one end; while the opposite end is provided with an escape-pipe, through which the heated air and products of production may be driven, after the fire has burnt clear, and caused to impinge against the sides of the vessel. The cylinder is provided with wheels to facilitate its removal from place to place.

Claim.—The application of copper, or other metal sheathing, to iron-ships or vessels, by interposing between it and the sides of the vessel another sheathing of some non-conducting material.—2. The employment of external ribs, or projections, for the purpose of facilitating the sheathing of ships or vessels.—3. The construction and arrangement of mechanical parts which constitute the moveable hot-blast apparatus, to facilitate the sheathing of ships or vessels.

JOHN BROWNE, Esq., Great Portland-street, Portland-place: For improvements in apparatus to assist combustion in stoves or grates. The patentee proposes to place a hollow truncated reticulated cone inside the fire, against the sides of which the fuel rests, whereby the upward draught is maintained, and the combustion is assisted. In some cases an additional chimney is put on the top of the cone to increase the draught; and when the kettle is put on the fire, in order to prevent it resting on the top of the cone, and thereby obstructing the draught, the cone is fitted with a cover having points projecting upwards, on which the bottom of the kettle rests.

Claim.—The application of an apparatus, as described, to stoves or grates, for the purpose of assisting combustion therein.

EDWARD IVES FULLER, Margaret-street Cavendish-square, carriage-builder; and G. TABERNACLE, Mount-row, Westminster-road, coach iron-founder: For certain improvements in metallic springs for carriages.

Claim.—1. A mode of connecting carriage springs by means of a stud or pin upon the end of one spring, which takes into a slot in a box attached to the end of the other spring; also, connecting a spring in like manner to a rigid bar or scroll iron.—2. A method of connecting springs of carriages by causing the end of one of them to rest on or between metal bearings attached to the forked end or frame supported by the other spring.—3. A means of connecting carriage springs by a bell-crank lever or sector-piece, whereby the rigidity or tension of the spring is increased in proportion as the pressure thereon is increased.

WILLIAM BUSH, of Great Tower-street, London, civil engineer: For improvements in lamps and in lighting.

Claims.—1. The employment, in connection with spirit lamps, oil lamps, candle lamps, gas burners, and other lamps, or apparatuses for lighting, of reflectors composed of parabolic plates of glass, silvered or quicked at the back by any process or process whereby the silvering or quicking is prevented from running at high temperatures.—2. The employment of reflectors made of plates of coloured glass silvered or quicked.—3. The employment, in connection with lamps and other instruments and apparatuses for lighting, of glass reflectors, silvered or quicked at the back, and dipping more or less into the ring of flame, whether that ring is composed of one body of flame or a number of flames arranged in a circle.—4. Several improved forms of lamps and apparatuses, and described.—5. The employment, in lamps and other lighting apparatuses and instruments, of pillars, pedestals, or standards formed of hollow glass, and silvered or quicked at the back.—6. A peculiar form of candle.—7. A floating marine reflector.—8. The partial covering of conical reflectors with silvering or quicking.—9. A deck light.—10. The construction of chandeliers of hollow pieces silvered or quicked.

PATENT GRANTED DURING THE PAST WEEK.

D. B. White, of Newcastle-upon-Tyne, doctor of medicine, for an improved mode of ballasting and stowing cargo in ships and other vessels.

DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

J. Wilson, Manchester, elastic riding belt.
H. Stephenson, Howley-street, Lambeth, atmospheric churn dasher.
H. M. Naylor, Birmingham, hook and eye.
E. Kesterton, Long-acre, carriage (the Akolaston).
Deane, Dray, and Deane, King William-street, gas stove.
G. Clark, Clifton, Bristol, wrist supporter for facilitating the practice of the piano-forte, organ, or seraphine.
R. Towley, Curator-street, London, plat or plait.
J. Cornes, Carrow Works, Norwich, dressing machine.
E. G. Williams, Liverpool, screen and sun machine.
P. H. Irvin, Hope-terrace, Nottingham, portable wash-stand, dressing-case.

THE BRITANNIA BRIDGE.—We learn from the Menai that there is at length a complete roadway over the Straits, the second great tube having been safely raised to its 100 ft. elevation, and forming, by its junction with the other tubes, a continuous rigid wrought-iron highway 18,401 ft. long, and between 5000 and 6000 tons in weight. The workmen are now engaged day and night in completing the junctions and adjustments

NOTICES TO CORRESPONDENTS.

* We must impress upon our correspondents, the necessity of invariably furnishing us with their names and addresses—not that their communications should, consequently, be noticed, but as an earnest to us of their good faith.

NONDELIVERY OF ALFRED CORNOLIS SHARES.—We have some further communications from Mr. Richards, of Goldsmiths, on this subject, and can only say we withdraw not an iota of the reprobatory remarks in the *Mining Journal* of December 22, made on Mr. Richards's statement. Those of the 29th were from a statement of the party charged with the offence, who called and stated to us that he was in a position to show good grounds for his conduct. It is impossible for us to judge between parties on *ex parte* statements, and as the matter is now in course of settlement in due course of the law, we think it had better not be renewed in our columns.

"M" (Birmingham).—A detailed description of Normanville's Improved Axle Boxes appeared in the *Mining Journal* of the 4th November, 1848.

GLASS REFLECTORS.—A correspondent writes—"In reply to Mr. W. Lee's, I beg to inform you that the glass reflectors are manufactured by W. Perks, jun., and Co., glass and lead merchants, Dale End, Birmingham."

"T. H. S." (Brompton).—The Glen Osmond Mining Association is not quoted in the English Share List, the company being private. Information may, probably, be obtained of Messrs. Gore and Co., 14, Old Jewry Chambers.

"F. O." (Clyde Iron-Works) writes, saying, that it is the opinion of most practical miners that safety fuse is a far more valuable article than tin cartridges; but that the miner often spoils it by ill-usage and carelessness. He, however, considers the straw better than the fuse, when it can be used; and that in general there are about as many accidents with one as the other.

John Stephen (Pemberton).—The Government Annuity Endowment Association is established principally to enable persons whose incomes terminate with their lives to secure annuities to their survivors. On joining the society an entrance fee of 11. 10s. is required, with 3s. for the book of rules, policy, and report. The institution was founded in 1836, when the number of annuities subscribed for was 660, the capital invested 4033*l.* In 1848, the number of annuities was 6291, the capital 226,627*l.* The secretary is Charles Hewitt, Esq., 40, King William-street, London-bridge.

H. Green (Walsfield).—We never give advice respecting mining property—apply to Mr. Evan Hopkins, whose advertisement appears in our first page, or any broker in the City, who will readily forward the information solicited.

"M. T." (Dublin).—Apply to Mr. F. W. Camps, of the Patent Office, 210, Strand, who will transmit an official circular of information, with statement of costs, &c.

* It is particularly requested that all communications may be addressed—

TO THE EDITOR,
Mining Journal Office,
36, FLEET-STREET, LONDON.

And Post-office orders made payable to Wm. Salmon Mansell, as acting for the proprietors

THE MINING JOURNAL

Railway and Commercial Gazette.

LONDON, JANUARY 12, 1850.

The *MINING JOURNAL* is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

There is nothing that we know of much newer than the new year. In mining affairs particularly, things are proceeding in that firm, settled, and orderly manner, by which they have been for some time past distinguished. The same may be said of the general business of the country, which, in all its leading departments, is active and looking up. We anticipate a prosperous spring trade in mining produce generally, and a concurrent elevation of prices, so as to make this growing branch of public industry more fully, but at the same time, more justly, remunerative. Our readers have, probably, had occasion to notice the encouraging prospects now dawning on part of our shipping interests, notwithstanding the heavy blow which it was confidently said would be inflicted, by the new navigation law, on that cherished branch of the national occupation. All commerce is inevitably linked together, and we couple, in close brotherhood and affinity, the mercantile and the mining interests of this laborious and persevering people. As a rule, a selfish policy in public affairs is an unprofitable policy; and a self-denying course of public conduct, publicly advantageous. Our commercial legislation has now for some years exhibited the latter quality in tolerably prominent relief. We embody now, and publish to all the world, as one of the most important of practical truths, what heretofore was thought to be an abstract proposition only—

"Man, like the generous vine, supported lives,
The strength he gains by the embrace he gives."

Nor is it by any means an improbable supposition, that the more fully and unreservedly we spread out our arms to receive the commerce of the entire world, the more fully we shall obtain a welcome access to its many-peopled shores. There is one ingredient in our case, as a people, which ought to be set more prominently forward than it is. Taking the population of these islands at 25,000,000 only, and allowing a quarter of corn as the average annual consumption of each, the total quantity for a year's food will be 25,000,000 quarters. The change in the Corn Laws has lowered the price of corn about 20s. per quarter, and in that way caused an outlay of about 25,000,000*l.* less than when they were ruling and rioting in the high prices prevalent under the sliding scale. This is a point for the consideration of the working classes, and amongst them of the labouring population of our mines; and we trust will be productive of such satisfaction and thankfulness, at so great a saving, enabling us to cheapen the produce of our looms and mines, as will give us, as a nation, a better place and a higher reputation in the great and enlarging markets of the world.

Since the appointment of the committee of adjudication of the COMPANY OF COPPER MINERS OF ENGLAND, in April last, we have attentively watched their proceedings, and followed with interest every step which has tended to forward the great object they have had in view—the rescuscitation of their extensive and time-honoured corporation. The information which we have given from time to time has enabled our readers to perceive the gradual progress which they have been making towards the desired goal, which, if it has not been so rapid as might have been anticipated, has been "slow, but sure." From the difficulties the committee have had to grapple with, and the various interests they have to encounter, the result of their labours, on the whole, must be considered highly satisfactory. Their full report, read by Mr. GILBERTSON, at an extraordinary general court on the 9th inst., will be found in another column. From this it will be perceived that the Chancery proceedings, certainly undertaken by Mr. LOND with most laudable motives, but likely very seriously to threaten the existence of the company, have been amicably settled, and litigation, with all its concomitant evils, avoided. Notwithstanding the equitable propositions put forward by the committee, we still perceive there are a few dissentients; and this appears to be the only cause that the affairs of the company are not at this present time placed on a secure and solid basis.

There is an old axiom, "there is never evil but good comes from it," and in this case it appears that the threatening attitude assumed by these dissentients, who, we believe, wished to receive on their debentures, an equal dividend with the trade creditors, a course of proceeding which would have been most unjust to the other interests, and would have reduced the dividend from 10s. to 2s. 6d. in the pound, totally impaired the credit of the company, and been the means of hastening it to a disgraceful and premature dissolution; to avert this step, the committee have wisely prepared a bill to amend their charter, to enable them to deal justly and fairly with all parties. At the same time, while so doing, they have not been unmindful of the causes which have placed the corporation in their present dilemma, and the amendment will, at the same time, be a reformation of the charter, which, however well it might have worked in the reign of William and Mary, has been found to be cumbersome and ineffective in the present "go-ahead" age. The important question of the day has not escaped their attention; the court of assistants will not possess the same unlimited power it has hitherto had of issuing debenture and preference shares, while the appointment of auditors is made compulsory, it having been from the want of them the present position of the company may be traced. In this they are not singular; but it is another proof of the necessity of an independent audit in those gigantic schemes—the railways—when it is found absolutely necessary in a company so comparatively small as that of the Copper Miners.

The Bank of England has, for some period, conducted the business of the company; the legality of this has been questioned, and perhaps, looking to the question stringently, they have had no right to do so; but when we consider that, by the stoppage of these works, the vast number of workmen who would have been deprived of employment, and left to starve

with their families, we think it a matter of congratulation, that whatever losses have accrued, the corporation have been the sufferers, and not their labourers, who have merely experienced a change of masters. The Bank are willing to release the property of the company on most advantageous terms, and there is now scarcely a doubt, that in a few months the corporation will have their property restored to them.

Whoever may be the governing powers to be elected on the resignation of the present court, we trust they will take warning from the faults of their predecessors. Several committees were appointed previously to this, whose labours had terminated, as one of their members (Alderman CARMEN) said, in smoke; and it is only this which has efficiently and effectually worked; and it may be difficult to find men possessing so entirely the confidence of all parties as to be able to smooth the difficulties as they have done. Although the new bill will make an audit compulsory, this is not the only thing which will be required—the ruling conduct of the corporation should be to follow their legitimate business, and not dabble in railways, or any other ephemeral stock which may chance to be the bubble of the day.

The meeting was but thinly attended; a proof of the confidence of the stockholders was shown, in the fact that nearly all the proxies were entrusted to the committee; and the vote of thanks passed to Mr. GILBERTSON and his colleagues was well bestowed, for if ever a committee deserved well of its constituents, they have eminently done so.

In our last Number, we inserted the directors' report read at the half-yearly meeting of the shareholders in the MINING COMPANY OF IRELAND at Dublin on the previous Thursday, and now with pleasure revert to the subject, as, although the report is not absolutely indicative of present profit, it holds out great hope of success for the future. From this report, and the chairman's explanation, it appears there has been a loss on the half-year's working of 200*l.*; but on reference to that of the corresponding periodical meeting of 1848, we find there was a loss of 900*l.* on the half-year, indicative, at all events, of some improvement; but when we take into the account that, during the latter period, upwards of 1100*l.* had been spent not on immediately profitable works, but on prospective improvements, it is clear there must have been a profit on the actual workings of nearly 900*l.* When we consider the deplorable state in which that unfortunate country has vegetated on for the last four years, it appears almost extraordinary that they should have progressed so well. Everything at present was going on satisfactorily; the directors had painfully considered it their duty to cut down all expenses as low as possible; and, in consequence, the number of officials had been reduced; and all salaries (their own, of course, included) above 40*l.* per annum, had been reduced from 20 to 25 per cent. These reductions had been assented to in the best feeling; and, if possible, the works were being carried on with greater spirit than before. Everyone being assured that, immediately on a return to prosperity, the reduced salaries would be augmented to their original standard. It will be seen from the report, that reductions to a considerable extent have been made in the amount of rating to local taxation; several new agreements entered into at low royalties for setts, in which promising indications of copper have been found; the collieries were in constant work, and likely to pay well; from the sale of the Audley estate the company would most probably, in the course of the present year, be in the receipt of upwards of 14,000*l.* due to them, which would pay nearly all their liabilities, and place them in a position to make good progress, without seeking 1*l.* from any other source than themselves. The assets amount to 159,922*l.* 2s. 10d., and liabilities to 17,370*l.* 2s. 2d.; and upon a comparison of the present brighter prospects of the company with the gloomy and discouraging phases through which it has passed, we trust a feeling of confidence will be diffused among the shareholders, imparting a spirit of corresponding animation and exertion on the part of the executive; and that this company, which has already afforded so much employment, and, consequently, averted so much misery from the population, will soon be placed on a solid, profitable, and permanent basis.

We have just received the report of the Select Committee of the House of Lords, appointed in the last session to inquire into the best means of preventing the occurrence of dangerous accidents in coal mines, and to report thereon to the house; and a voluminous affair it is, consisting of upwards of 600 pages, besides an appendix, and a variety of diagrams, illustrative of the various plans suggested, the different modes of working collieries, &c. Notwithstanding, however, the apparent ocean of letter-press to wade through, there is a vast amount of highly-interesting and important matter to be found in these pages; and although there certainly is nothing new elicited as to the causes of explosion, the appointment of the committee has happily brought out many new suggestions, and caused much active inquiry among a large body of scientific men. It is highly satisfactory to find the utility of the MINING JOURNAL, in procuring and disseminating information of great importance to the mining interest, so handsomely acknowledged—Professor ANSTED, JOSHUA RICHARDSON, C.E., and MATTHIAS DUNN, M.E., each quoting and referring to data obtained by them from its columns. The committee state in their report that, having during the short period of the session which remained from the date of their appointment felt the necessity of pursuing the inquiry entrusted to them with as little delay as possible, they trust it will be found that they have collected much useful evidence upon most branches of the subject to which it has been directed; although, had the time been longer, it might have been rendered in some respects more complete. After allusion to the inquiries which have taken place in previous years, as far back as 1835, one in 1839, and one in 1842, the report proceeds to say, it still appeared desirable to ascertain, if possible, whether any, and what progress, had been made during the above period in the knowledge and practice connected with these fatal events; and also whether the time is not arrived at which it may be practicable for the Legislature and the Government to effect some good, with the concurrence of almost all parties concerned, by means of a judicious system of inspection, and by promoting, in whatever manner may seem most effectual, the diffusion of knowledge among the mining population of these kingdoms. They have throughout abstained from speculative opinions or investigations, which they considered inappropriate subjects for their conclusions, as also on scientific suggestions and inventions they have left others more competent to decide; they have limited their attention to those cases alone which have been subjected to the test of actual experience, of which, therefore, direct evidence was only to be obtained from those whose professional acquisitions and experience qualified them to judge of their real value.

They then allude to the several inventions laid before them—Mr. GURNEY's high-pressure steam, BREXTON's centrifugal fan, and SERVE's mine ventilator, and, without pronouncing an opinion as to their comparative merits, call particular attention to the evidence of these gentlemen. The next consideration in the report is the widely-different actual conditions of the coal mines of this country as respects ventilation, all of which, it is to be feared, are highly defective. From the evidence adduced, there is no doubt but considerable improvement might be effected; and for enlightenment on this part of the subject, they refer to the evidence of Messrs. ELLIOT, FORSTER, RICHARDSON, BARBER, DOBSON, DUNN, and TAYLOR. In alluding to the varieties of accidents, among the most formidable of which are those arising from breakage of ropes, they particularly point attention to the evidence on the invention of Messrs. FOURDRINIER, so often alluded to in our columns. Falls of roof are represented to be in most districts the most common form of accident, and are, as a matter of course, to a great extent, unavoidable; their probability is, however, much increased by an inadequate supply of timber for the necessary supports. This deficiency often arises from the fear of expense, although, in fact, nothing is saved, from these falls causing insufficient ventilation. It is thought there is still room for hope, that if the state of such mines were made more distinctly known, and thereby the responsibility of those on whose neglect it depends were rendered more manifest, some improvement might be effected, even in this respect. The evidence of Mr. WOODHOUSE refers to this.

Those fearful catastrophes arising from the influx of the sea, or large accumulations of water in old workings, are also noticed as strong practical proof of the necessity of inspection. As one important step is to be gained by the actual condition of the several coal districts being made known, the committee consider the appointment of Messrs. PHILLIPS and BLACKWELL to be judicious, as a first advance towards the object; but a commission so limited in its organisation must be very inadequate to the effectual prosecution of such a task, and the question remains, whether it

would not be desirable that Parliament should authorise the establishment of some more comprehensive system, which might tend to promote the same end with greater efficiency. On this point a striking unanimity was manifested, for, without any exception, every witness expressed an opinion more or less favourable to the establishment of a Government inspection; and on all hands it was admitted that to enable inspectors to discharge their duty effectually, it would be necessary to give them a right to enter and examine mines, and to call for and inspect working plans.

Some witnesses, indeed, went further than this; but the committee think that interference carried beyond a certain point would result in vexation on the one side, and disappointment on the other, and would tend, not by substituting the responsibility of an inspector for that of the colliery owner and his agents, and by probably preventing their friendly co-operation, to defeat the very end for which it was designed. In considering the evidence principally of Mr. TREMENEHERE, of the successful working of Government inspection in Belgium and France, the different circumstances under which mining property is held in this country is taken into view; still the committee consider there is evidence to show that, in those countries, the system is found to work without difficulty or vexation, and with the good-will of all concerned; and, therefore, although in several respects the circumstances may not be precisely such as to justify at once the assumption that it forms a precedent on which we could rely in similar arrangements, still it can hardly be deemed unwarrantable to view it as affording a practical ground of hope that they might be established here, under proper modifications, with a like success.

It is gratifying to be able to say, that we feel convinced the results of the labours of the committee will be productive of much good; and as the evidence adduced will tend to the spread of that knowledge of the condition of the colliery districts—a subject hitherto but little understood by general readers—we shall, in future Numbers, give an epitome of the evidence of all the principal witnesses.

The Appendix contains, in addition to the Commissioners' instructions, the following papers:—"On Ventilating and Warming the York County Hospital," by Dr. ARKOTT; "Improved Method of Ventilating Collieries," by W. BRUNTON, C.E.; "Copy of a Letter from J. HUTCHINSON, M.D., to Lord WHARFCLIFFE;" "Observations respecting Accidents in Mines and their Causes," by our old and esteemed correspondent, EVAN HOPKINS, M.E.; "Extracts of Correspondence previous to the foundation of Workington Colliery," by M. DUNN, M.E.; "On Parliamentary Interference in the Working of Mines," by the same gentleman. All these will be noticed in due course; in the meantime, we commence in another column with the extracts of the evidence in its due order, which we have no doubt will be read with considerable interest.

We are much gratified on learning that the disputes, referred to in our late Numbers, affecting the interests of the QUEBEC MINING COMPANY, as involving a question between the Government and the Indian chiefs, are likely to be arranged in such a manner as will be equitable, giving to those who have claims such as is justly their due. There could not, in our opinion, have been but one result, so far as the company was concerned—that of obtaining redress from the Government for any loss they might sustain, whether by the destruction of property, or the suspension of operations; and it is, therefore, most pleasing to gather from advices, received by the last packet from the company, that "the late disturbances on Lake Superior have been suppressed, the leaders and chiefs of the Indians arrested—that operations will be recommenced immediately; and the company has every reason to expect to be fully indemnified by the Government for all losses." This we consider only fair and just, as the company, having paid for their lands, ought not to suffer from the refusal of the provincial Government to compensate the Indians.

We are given to understand that the late quarrel arose from the Government refusing to treat with certain lawyers, who were in the employ of, or represented themselves as being deputed by, the Indians to represent their cause, and not from any disinclination on the part of the Government to act with even-handed justice. Under these circumstances, the legal gentlemen were placed in a dilemma, being obliged to adopt one of two courses—viz., that of "abandoning the field," or "strengthening their position." The latter alternative seems to have been considered by them the most ready way, and as a preliminary measure they accordingly seized and possessed themselves of the works belonging to the Quebec Mining Company. The Indians, it would, however, appear, not holding with the forensic attainments and legal knowledge of the "pale faces" who professed to represent their rights, have since deserted them; the latter, as we are informed, being now in "durance vile."

That the Government will act equitably in the matter we cannot entertain a doubt, and Capt. O. H. MATTHEWS, who was in London upon the first arrival of intelligence of the outbreak, has since left this country on his return. It is, however, to be hoped before his arrival, he will have found everything restored to order.

A case, to say the least of it, of great hardship on the part of the directors of the GREAT NORTH OF ENGLAND RAILWAY COMPANY, has been submitted to us by Mr. JOSEPH PRICE, of the Durham Glass-Works, Gateshead, which we unhesitatingly make public, as an additional instance, among the many which have, during the last 10 or 12 years, been so painfully exposed, where railway directors have induced men of influence to advance the undertakings they have promoted; and when they have reaped all possible benefits from their exertions, and they feel it their interest to do so, throw them overboard, under a plea of justice to the body of shareholders, with an enormous sacrifice of wealth and peace of mind. We make these observations under the impression that the statement is founded on facts, and which, from the respectability of the parties, we have no doubt, is the case.

It appears that, about the commencement of December, 1835, Mr. PRICE was waited on by Mr. COATES, of the firm of MERRIMAN and COATES, solicitors, Darlington, Mr. WATSON, solicitor, Newcastle, and another gentleman, who informed him they were canvassing for the Great North of England Railway, and solicited him most strongly to become one, as also to use his influence with his friends, as they wished to obtain the Act of Parliament as quickly as possible. Mr. PRICE mentioned several gentlemen whom he thought likely to become shareholders, and put down his name for 150 shares, 10 for each of four grand-children, and 30 for a sister, making a total of 220 shares. The deposits of 2*l.* each on these shares were paid, and no further notice was taken, nor did the holder consider himself liable for any further sums immediately, when he received a letter, dated 14th Dec., 1839, four years after, requesting arrangements for the payment of calls and interest thereon, amounting to 9315*l.* 1s. 3d.; and, eventually, Mr. CARGILL, one of the directors, waited on him with drafts for his acceptance to the above amount, at various dates, of four, six, nine, &c., up to 24 months, which he was compelled to accept, or defend a vexatious and harassing law-suit.

In Mr. CARGILL's written acknowledgment for these acceptances, he says—"Should these bills become due previous to the start taking place in the price of the shares of the company, so that your making a sale of any would entail a large loss upon you, I have no doubt the company will, upon your application, consent to renew these bills as they become due, or, at least, a reasonable part of them. At the same time, it is understood that, should you dispose of any or all of such shares previous to the acceptances given for them being due, the company does not make the transfers until the calls, including those for which the bills are given, are *bona fide* paid up." About one-half of these bills were renewed by the directors, when, without ceremony, the shares were forfeited when they were at the lowest quotations, which prevented Mr. PRICE from making sales, if ever so wishful, although Mr. WILKINSON, the chairman of the directors, declared at one of the general meetings that "that gentleman had been the best friend they had," and had given every assistance at the commencement of the undertaking." Afterwards, at a special meeting, when the forfeiture was being canvassed, he was taken into a private room by two of the directors (Mr. FLEWIS and Mr. HENRY PEASE), who informed him "they had the power, and would protect him;" nevertheless, the result remained the same.

Mr. PRICE now proposed, as a mere matter of justice, that the directors should allow him shares to the amount of the *bona fide* capital which he has paid them; but this was refused. On Messrs. EDWARDS and JOYCE inquiring, on the part of Mr. PRICE, the reasons for such conduct, Mr. OXLEY (a director) informed them "Mr. PRICE had refused to give his acceptances," but afterwards declared they had misunderstood him; but no further explanation could be obtained. On the 2d June, 1845, a memorial,

THE GOLD WASHING DISTRICTS—No. I.

BY E. HOPKINS, C.E., F.G.S.

It is now upwards of twelve months since I made some observations on California (after my return from the Pacific), the produce of which had then created so much excitement as to cause an apprehension amongst many that it would soon depreciate the value of the currency. My object then was to represent the real state of the case, to avoid extreme views, and to show that the California gold discovery was nothing more than the ordinary accumulation of auriferous sand. It is true, it will be the means of adding a few millions to our annual supply, but as the gold washers of other countries abandon many of the poorer deposits, and flock thither, the supplies of bullion from less productive regions necessarily decline, and, consequently, the grand total will not be more than the requirements of the increasing demand. A party of Americans having accidentally digged and washed in a few of the richest parts of the deposits, the whole country was hastily considered by them, and many others, equally rich in the precious metal; this gave rise to exaggerated estimates, and political motives at that period encouraged all glittering embellishments from the newly-acquired country. However, 12 months have elapsed without producing more effect on the currency than the discoveries in the north of Europe: we still find the value of the standard metal 3*l*. 17*s*. 10*d*. per ounce; and I consider the public much indebted to the *Mining Journal* and the *Times* for the judicious caution constantly given during the feverish excitement to emigrants and capitalists, to prevent wild schemes, formation of companies, &c. A considerable quantity of gold, it is true, has been obtained, but the amount is not unusual. The last year's produce, notwithstanding the immense emigration from all countries, does not exceed 1,200,000*l*., including the products of other washings bordering the Pacific—a quantity considerably less than formerly obtained from Choco, and other places in New Granada. The Russian washings yield annually 4,000,000*l*. Therefore, as already stated, California gold washings are not likely to produce any serious effect on the currency, whilst the useful industry is progressing. Although, as a gold producing country, it will soon be brought to its level, and notwithstanding the bad effects it possibly will have on the useful industry of the United States, yet it will do good. It has already given a powerful impulse to the spirit of enterprise to many branches of trade. Instead of sacrificing so much life, and wasting so much capital, in the vain attempt of discovering a north-west passage, attention will be drawn to effect a passage in a much more convenient point—viz, the Isthmus of Panama. These and many other advantages will follow, from the colonization of the Californias.

Extensive and uniform deposits, like those formerly existing in Veraguas, Choco, Brazil, and the Ural, worked by slaves, or carried on like the washings in the Ural, where one man is able to extract sufficient stuff in 10 hours to produce 2*l*. 10*s*. worth of gold from the washing machines, may do well for companies, but California washings, under the existing circumstances of independence, and the want of proper control, are only fit for hard-working men, labouring for themselves. I doubt much whether the average per head of the washers at the present time employed exceed 32 per day.

The natives of gold districts are generally expert washers, and know the localities where the gold mostly accumulates, and the granite, porphyries, and clay slate which produce it; yet, notwithstanding this important acquisition, and climatized so as to be able to stand all weather, they seldom obtain above 2*s*. per diem on an average, in the Isthmus of Panama, and other gold washing districts bordering the Pacific. To an European these gold washing scenes are pictures of misery; the diggers and washers toil and live like the beast of the forest, fed on the coarsest food, and sleep without shelter. In gold mines, especially those worked by Europeans, the case is different, the ordinary convenience and comforts of a mining establishment are provided, and such works are easily carried on by companies; but not so with gold washings. Although gold washings are, generally speaking, the most productive, and the sources whence gold is principally obtained, yet it is pleasing to record the profits derived from working lodes of auriferous pyrites in the Brazil and New Granada. The increased knowledge which has been acquired with respect to the character of gold formation, the more judicious and economical management, and the improvements introduced in the modes of extraction, &c., will, doubtless, render many more gold veins more productive than they have hitherto been, especially when carefully selected by those practically acquainted with the subject.

Gold is generally found in the debris of certain granites and porphyries, as well as in their respective clay slates; the superficial production is far greater than that obtained from veins. The production of gold depends on the primary composition and circumstances, forming chemical action and deposition, and not, as some suppose, confined to certain geological epochs. In fact, the superficial process of decomposition in the auriferous crystalline rocks is constant, more or less, in every region on the face of our globe; and the great auriferous deposits resulting from which are equally actively going on, depending on mineral and physical conditions, confined to no age nor to any particular zone.

Many have imagined that the Ural gold works were lodes, or veins, worked underground, like copper and lead lodes; instead of which we find them like the generality of gold-producing districts—viz, diggings and washings in the detritus, or shingle, accumulated on the slopes of the ridges, and in the adjacent ravines and plains. The only subterranean works are those confined to small auriferous quartz veins, yielding, if any, but a very slight profit. The gold quartz veins of Siberia are like those of other regions, glittering with gold on the surface, and scarcely producing sufficient to pay cost a few yards in depth, unless there be iron pyrites, vacuities, or any other causes, to favour internal aggregation. Consequently, when we hear of operations being commenced on gold quartz veins, &c., it is an indication of the exhaustion of the rich superficial deposits. No native miner would work a quartz vein while he can obtain a moderate extent of ground for washing, as he would well know by experience that they seldom pay cost a few yards from the surface. The only veins worthy of prosecution for gold are the pyrites: these often produce large quantities of gold to considerable depths, but of a low standard.

Baron Von Humboldt states that the richest gold deposits were those which were derived from ridges having a north and south direction, and that such deposits were principally on the east side. It is true that the great meridional chains are the most productive in gold; but this is the necessary result of the meridional structure of the crystalline rocks, and not from any other cause. The sides of decomposition depend on local circumstances, be they east or west. The banks and slopes of the tributaries of the Sacramento, in California, are strewn over with auriferous debris; on the western flank of the Sierra de Nevada, the deposits are more or less enriched by concentration, in pools, and other mechanical obstacles, and the productiveness of the deposits of the valleys found to diminish in quantity (but of a coarser grain), as the activity of the mountains increase.

The gold washings of El Mineral de Veraguas have been once very productive, and are still the most important in the Isthmus of Panama. During the years 1800 and 1804, gold equal to the value of 328,000*l*., or 82,000*l*. per annum, passed through the provincial treasury from this small district, and this was considered but a third of the total produce of the north coast. Since then, however, like all other ancient gold washings, the accumulated auriferous debris of the hills and the valleys have been all washed over; the present gold seekers have now only the old refuse, and the new deposits from the decomposition going on. The gold obtained from these washings is of large grain in the higher parts, and diminish to very fine grain down in the plains, and is of a high specific gravity. The great inconveniences attending the washing for gold, is the necessity of being almost constantly in the water, and the laborious work of removing all the large stones to get at the inferior deposit—a work which cannot be effected by machinery. Considering the scattered character of such deposits, and the uncertainty of their contents, and the indispensable necessity of the work being done by manual labour, exposed to all weathers, it may be easily conceived that gold washing in the deserts can only be done by hard-working men; therefore, those who have been led to go to pick up gold in California from the embellished accounts of our transatlantic brethren, will be disappointed, unless prepared to undergo the usual attendant fatigue, and be satisfied with an average daily produce much below that represented in the public papers. The extraction of the gold from the sand, after the auriferous bed has been taken up from under the stones, is easily effected by means of screens and perforated plates, fixed on hollow trunks, placed at a slight angle, and rocked like a cradle. It is a simple method, and the light sand is quickly dispatched, leaving a black ferruginous tuffaceous substance mixed with the gold behind in the hollows of the inclined trunks.

There have been numerous descriptions of machines invented and applied to extract gold; but I have found, by many practical experiments on a

large scale, and on large quantities of stuff, that blankets on inclined planes in the front of stamping mills, and flat conical wooden bowls for the subsequent washing, are the best adapted for gold veins, and the screens and rockers, with the same kind of bowls as above described for the final washing, the most simple and convenient for the work in gold deposits.

[To be continued in next week's *Mining Journal*.]

ON THE IMPORTANCE OF A PERFECT SAFETY FUSE TO THE ECONOMICAL WORKING OF MINES.

[FROM A CORRESPONDENT.]

When persons invest their capital in an enterprise of considerable magnitude, they will always feel a disposition to attend to the quality and cost of those articles which involve the principal portion of expense; hence in mining, every change in the price and character of machinery, coals, timber, iron, and other materials which are demanded in large quantities, is watched with great care, and regarded as having a most important influence upon the general interests of such speculations; but it should by no means be taken for granted that those articles of consumption which make the most imposing show on the pages of the merchant's ledger, are, in their quality and cost, of the greatest consequence to the economical working of a mine. The breaking of a capstan rope, a chain, or even a ladder stave, is not to be estimated at the loss of the article at cost price, but rather by the amount of damage, loss of time, and expense, which such breakage may occasion. Such is certainly the case with the safety fuse. Inconsiderable as the amount paid for it is, even in the largest mines, it must, if defective in quality, occasion the most serious results—not only in exposing the working miner to great danger, but also in damaging the adventurer by increasing the working cost, and diminishing the proceeds of the mine. It is important that all persons interested in mines should be fully informed on this subject. The cost of fuse is relatively so small, that in the Cornish mines the average amount paid for this article varies from seven-eighths of a penny to one penny in 1*l*. of the whole working expenses of the mine; but this fact, while it may lead some men to disregard the subject entirely, clearly teaches that if quality is in this case of great importance, no reduction in the price can possibly be an object of consideration.

Let it be remembered, that the fuse is used to convey fire to the charge in blasting; and that, if defective in quality, it will more or less frequently fail in the performance of this duty. What, then, is the consequence of a failure? At present no reference is made to the miner's danger; but, fixing attention solely to the question of expense, it is obvious that, when a fuse misses fire, the tamping must either be picked out, or a new hole must be bored. The operation of picking out a hole is, however, so very dangerous, that it is avoided by every considerate miner, and is positively forbidden by many of the agents. Recourse must, then, be had to the boring of a new hole; but which ever course is adopted, a new charge is required. The writer has taken some pains to ascertain the precise value of the labour, materials, and loss of time, occasioned by the misfire of a single hole. Consulting several of the most experienced managing agents of Cornwall on the subject, the lowest estimate he has heard mentioned is 2*s*. 6*d*., and the highest, 5*s*.; and, from a careful consideration of the reasons and details which have been given, he is led to regard 4*s*. as a fair charge for the loss in labour, time, and materials to the miner, occasioned by the failure of one piece of fuse. If this estimate is correct, and a fuse is sold at 4*d*. per coil, which will convey the fire with unfailing certainty, and one coil will blast 12 holes, then it follows that a fuse which would misfire once in 144 blasts would be worth nothing; for the loss occasioned by a failure, in this proportion would be equal to the cost of a perfect fuse. From this fact, it is evident that whether the loss occasioned by a misfire is estimated at 4*s*. or 3*s*., or even less, a rate of failure which would scarcely be noticed, is sufficient to cover the whole expense of the fuse. This circumstance demands the serious attention of the mine agent and mine adventurer. To secure this attention to the subject, and not to prejudice any individual manufacturer, is the object of the writer; but lest it should be supposed that the failure of fuse is merely ideal, and that, as has been intimated, the article is so easily made that there is no real apprehension of a defective fuse being vended, it may be stated, that in one large mine, some time since, the men working the last core by night prepared three holes for blasting in succession, in which the fuse failed every time, so that no blast took place. They then abandoned the hole which had failed the last time, and went up. Their comrades, who followed them as first core by day men, picked out this hole, charging it again, and putting two pieces of fuse in the hole together, but both failed; and these men, afraid to proceed with their work, also went to the surface; so that two cores were spent by this *pare* without obtaining a single blast. In another mine—a very small one indeed—10 holes missed fire in one week, although two pieces of fuse were frequently put into one hole. In a third mine, fuse has been supplied which was found so worthless, that it has been given away instead of cordage, and used for that purpose. Such statements might be multiplied; but these are sufficient to show that all fuse is not of the same quality. In one large mine, with which the writer is well acquainted, the average rate of failure through the introduction of a defective fuse is, according to the testimony of intelligent miners, at least 1 in 20; but, anxious to avoid doing injustice to the argument, it shall be taken at 1 in 40; then, as in this mine, there are more than 14,000 holes blasted in a month, there will be a failure of 350 holes monthly, which, at 4*s*. per hole, will occasion a monthly loss of 70*l*.; to this loss the miners are subjected, in order to effect a nominal saving of 3*l*. or 4*l*. in the cost of fuse; but the loss occasioned to mine adventurers goes far beyond the mere cost of providing a new blast. It will be admitted as an axiom in mining, that all the costs of a mine are incurred for the purpose of breaking ground. Excavation, and that alone, can develop the resources, and procure returns from a mine; and it may with tolerable safety be calculated, that not more than one-third of the ground is broken without blasting. This, at least for mines in Cornwall, will be regarded as a reasonable estimate. It, therefore, follows that two-thirds of the expense of Cornish mines is incurred for the purpose of blasting holes. Let these facts be applied to the large mine already referred to. The monthly cost of that mine is about 4500*l*.; setting aside one-third of this sum as incurred on account of ground broken without the use of gunpowder, there remains 3000*l*. as a permanent monthly charge for blasting 14,000 holes. If, then, in consequence of a defective safety fuse 350 of these holes fail, it follows that the cost which ought to have blasted 14,000 holes, is incurred to about 13,650, which, of course, occasions a loss to the adventurers of 1-40th part of 3000*l*., or 75*l*. monthly. Again, the underground work done is not alone affected; in the ratio of the failure of the fuse a proportionally less quantity of ore is raised. Allowing one-third of the ore to be broken without the use of gunpowder, upon the rate of failure previously supposed there will be a diminution of 1-40th of 3*d*., or 1-60th of the whole produce of the mine, occasioned by these failures—a loss of great consequence in almost every mine; nor is this theory—it is fact. In an important Cornish mine, a director, a short time since, called upon his managing agent to demand the reason why his monthly sale had diminished in quantity. The answer he received was—"We have lately been supplied with safety fuse from a new manufacturer; and it fails so frequently, that the men cannot break the usual quantity of ore."

Here, then, are three separate elements of loss. The waste of time and materials to the men—the diminished amount of work done in the way of excavation, amounting to 1-60th of the whole—and a decrease of production of ores also to the extent of 1-60th. But although the first loss will, for a time, fall upon the men, and, in connection with a consciousness of danger, occasion great suffering, it must ultimately fall upon the adventurer. For if men of established reputation, as able and industrious miners, do not get the usual wages, in process of time their price for the ground will be raised, and the whole burden of the loss be thrown upon the mine. And so, in fact, it ought to be; for if the miner had his choice of fuse, he would select that most certain in operation, irrespective of every other consideration. It thus indubitably follows, that if a fuse be introduced into a mine which occasions an increase in the misfire of holes to the extent of 1 in 40, the result will be an increase in the working cost to the extent of about 1-30th, together with a decrease in the production of ores amounting to 1-60th of the whole.

If these facts obtain the attention they merit, it will be regarded as a primary object of mining economy to obtain a fuse that shall act with unfailing certainty. Whatever difference of opinion may obtain respecting the cause of the repeated complaints which are now made against the fuse, it is an incontrovertible fact, that they have arisen subsequently to the expiration of the original patent. And it should be further considered, that the rate of failure supposed in the above calculations—namely, of one hole

describing Mr. Price's claims on the consideration of the company, stating that the success of the company being established, the directors would be perfectly justified in making him an allotment of shares for some part, at least, of the amount which he had sacrificed, and signed by 10 shareholders, was presented to the directors, but was coolly returned by them, stating "they could do nothing in the matter."

The true reasons for this harsh conduct on the part of the directors Mr. Price cannot conceive. He has understood, however, that they had 905 unappropriated shares, making, with the forfeited ones, several hundreds more; and that some arrangements were made, the shares now being valuable property, with a few select shareholders, who had more influence than the unfortunate Mr. Price, which perfectly satisfied them; and he very naturally asks, why he, who paid so large a sum into the partnership, should be unceremoniously turned out, while others who had not contributed near so much were re-admitted after the forfeiture? The whole proceeding, however valid in point of law, bears the indelible stamp of dishonesty, railway tyranny, and injustice, and is certainly not calculated to convince individual minds of the immaculate honesty of railway boards, though, within the last year or two, some black sheep have been exposed.

In the *London Gazette* of yesterday week, there appeared the proclamation of the QUEEN, appointing the new commission of the fine arts for the promotion of the Great Exhibition of the Industry of all Nations, to be held in 1851. As far as the political bias of parties named therein has been considered, a finer feeling of impartiality could not have been evinced; while the real interests of the question have been well cared for—indeed, it would strike us forcibly that politics had been entirely eschewed. Free-trade and protection, the City of London and the East India Company, the aristocracy and the people, art, science, agriculture, and commerce, all appear before us by their representative. As promoter of the exhibition, the PRINCE CONSORT, of course, takes the lead. The Earl of Ross and Sir Charles Lyell, or the President of the Geological Society for the time being, may be said to represent science; commerce, by Mr. T. Baring; agriculture, by Mr. Philip Pusey; banking, by Mr. Jones Lloyd; the East India Company, by Sir Alexander Galloway, or the chairman for the time being; engineering, by William Cubitt, Esq., or the president of the Institution of Civil Engineers for the time being; and, among others, form the body of commissioners—among whom are Mr. Ald. Thompson, who may be considered to represent the iron trade and the City interests. The 20,000*l*. prize money has been invested in the names of the Marquis of Northampton, Earl of Clarendon, Sir J. P. Boileau, Bart., and J. C. Peache, Esqrs. The treasurers for the receipts are Baron L. de Rothschild, Sir J. W. Lubbock, Bart., A. K. Barclay, Wm. Cotton, and S. M. Peto, Esqrs. For the payment of all executive expenses, P. M. Neve Foster, J. Payne, and Thomas Winkworth, Esqrs. The executive committee is composed of H. Cole, C. W. Dilke, G. Drew, F. Fuller, and R. Stephenson, Esqrs., with Mr. M. Digby Wyatt as their secretary. JOHN SCOTT RUSSELL, and STAFFORD H. NORTHCOTE, Esqrs., are joint secretaries to the commission.

The commission is empowered to inquire as to the best mode by which the productions of our colonies, and foreign countries, may be introduced to the kingdom, the most suitable site for the exhibition, its general conduct and regulations, with the best mode of determining the nature of the prizes, and of securing the most impartial distribution. Three of the commissioners are to form a quorum; and they are further empowered to nominate and appoint persons of ability to act as local commissioners in each part of the kingdom, and in foreign parts, as they may think fit, as also to remove and appoint others. They are further required to report from time to time, in writing, all their proceedings under the commission, together with any other matters worthy of consideration. Here, then, we have a nucleus, around which we hope to see the talent and the wealth of the world gather; and that subscriptions in aid of the funds will speedily pour in, and place such resources at the command of the commissioners as will enable them so to arrange the exposition as to render it in every way worthy of the nation from which it emanates, and satisfactory to the world at large.

Great interest has been excited in the manufacturing districts, and there is little doubt Lancashire, as a cotton spinning and a machine-constructing county, will exert itself to the utmost to produce *chef d'œuvre* in the several branches of those arts to which she is so mainly devoted. At the Royal Society of Dublin, on Monday evening last, when his Excellency the LORD LIEUTENANT, and a number of visitors, attended, Mr. RICHARD TURNER and his SON, of the Hammersmith Iron Works, exhibited a model structure, intended for the great exhibition. It is on a scale of 10 feet to 1 inch, proposed to be erected in the Green-park, between Piccadilly and the Birdcage-walk, and that the marble arch, erected by GEORGE IV., at Buckingham-palace, should form the principal entrance. The entire structure will cover an area of 34 acres.

The front consists of a semicircular colonnade, 25 feet in height, with a sweep of 436 feet on either side of a centre archway 60 feet in width; and on each side of the semicircle are the extensions of the colonnade, in a straight line, 300 feet each. The columns are all of iron. On each side there is a two-story brick building, 1000 feet long, 40 feet wide, and 30 feet high, broken in the middle by a large dome, 120 feet in diameter, and 120 feet high, which are to be used as immense refreshment saloons, in which the "viands of all nations" shall be served up in true national style. The lower floors of these side wings are to be used as committee-rooms, and there are also two extensive halls, in which conferences may be held, whilst above are store rooms for valuable articles, and the sculpture galleries. The upper rooms, which will be connected by galleries in the dome, are proposed to be appropriated to pictures and the fine arts. Within this enclosure is a large centre building, 600 by 500 ft., the walls of which are to be entirely composed of glass, with roof of corrugated iron. The building is divided into three compartments—two side ones 150 feet across, and a centre one 200 feet across. The entrance to the building is to be by doors, at intervals of 15 ft. At the corners there will be a dome 120 feet in diameter, and in the middle one of 180 feet in diameter, and 200 ft. high. The cost of the proposed erection will be 30,000*l*.

It is also proposed that during the intervals of the quinquennial exhibitions, the structure, which will, of course, be substantial and permanent, be converted into winter gardens, which might be made available for the study of botany, and a valuable source of recreation for the juvenile members of such families who are in a position to adopt the advantages offered. Though a somewhat grand conception, and certainly far superior to the flimsy and tinsel affair in Paris, in 1848, it is not very generally considered to be quite suitable to the purpose. It is, however, gratifying to see talent thus early devoted to the scheme, and is an earnest of the advances we may expect to make during the ensuing spring and summer months, in productions of the arts and manufactures for exhibition.

The first meeting of the Royal Commissioners was held yesterday at the New Palace, Westminster—his Royal Highness PRINCE ALBERT presided—and the attendance was very numerous, there being present the Right Hon. Sir ROBERT PEEL, the Right Hon. HENRY LABOUCHERE, Sir ARCHIBALD GALLOWAY, Sir CHARLES LYELL, Mr. Baring, Mr. BARRY, Mr. BAZZLEY, Mr. CORDEN, Mr. CUBITT, Mr. EASTLAKE, Mr. GIBSON, Mr. GOTT, Mr. JONES LLOYD, and Mr. Alderman THOMPSON. The secretary, Mr. STAFFORD HENRY NORTHCOTE, was also in attendance. We understand that the main business transacted related to the preliminary contract which had been entered into between the Society of Arts and the Messrs. Munday's; the commissioners were of opinion that the contract, which had enabled the proposal to be brought to its present state, and had guaranteed the carrying into effect the proposed exhibition, was of a very liberal character; but, in accordance with what appeared to be the wishes of the public, they decided to give notice of its termination, and to place the whole undertaking upon the basis of a general subscription, public feeling having been so strongly expressed in support of the institution, as to render any such contract now quite unnecessary.

PANTDRINIOG SLATE QUARRY.—In the Insolvent Debtors' Court, on Thursday last, Mr. G. Kant Pollock, an attorney, was brought up on his petition to be discharged, before the chief commissioner. It appeared the insolvent had leased and worked the above slate quarry, and from a serious accident in the workings, retarding its successful operation, he attributed his insolvency. Mr. Cooke, on his behalf, said, that the quarry was a highly valuable property, and there was every hope that, if Mr. Pollock was spared, in a few years all the debts would be paid in full. The late Sir David Pollock, and his executors, were creditors to the amount of 2500*l*., money advanced on the property. The Chief Commissioner said, he was happy to say that nothing had appeared which was at all derogatory to the insolvent, as a gentleman and a man of honour, and he was accordingly discharged.

in 40—would only give an average of one missfire to one man in any one month; for the miners of Cornwall do not blast more than 20 holes each per month, or, rather, working two together, 40 holes as the joint result of one month's exertions. It is, therefore, certain that this rate of failure would never occasion great excitement and alarm, and lead men to make repeated complaints to agents, and even to urge the case unitedly as matter of serious consequence in a public mine survey. When these things take place, they are demonstrative proofs that the estimate given above falls far short of the loss sustained by the mining interest from the introduction of defective fuse. It may, therefore, be fairly questioned whether counters on engines, or any of the many guards and tests which have been resorted to for promoting the efficiency of machinery, and limiting the current expense of mining operations, are so much called for as a faithful and impartial record of the number of holes missed in underground blasting, accompanied by a statement of the cause of failure. This would at once induce carefulness and improvement on the part of the miner, and protect the adventurer from the serious loss occasioned by an imperfect and spurious safety fuse.

But, in that case, it must follow that no mine-agent shall have any direct or indirect interest in the manufacture and sale of this article. This ought, under any circumstances, to be strictly prohibited. In order to give confidence alike to the adventurer and the miner, the agent should go beyond this, and evince perfect impartiality. All partisanship should be laid aside, and full proof be given that the best safety fuse would always obtain a decided preference.

Original Correspondence.

MANUFACTURE OF IRON.

SIR.—I am not in the habit of misconstruing any one intentionally, and I should be sorry to do so by accident. Here is the passage, which I certainly consider surrenders virtually the whole theory, that the incorporation of cinder is an indispensable adjunct to good working bar-iron—"I consider the presence of cinder, or any alloy, a disadvantage, or rather very objectionable, in iron which has been wrought into a form for permanent use, such as sheets, boiler-plates, railway bars, the tires and axles of railways, and many others, amongst which the links of the chain-cable resist the raging of the elements." If the presence of cinder in cable-bolts "is a disadvantage, or rather very objectionable," such presence must be an accident and an imperfection, and it is, therefore, certainly not a misconception to say this admission is fatal to Mr. Leighton's theory. In truth, Mr. Leighton, in seeking to make iron into "one solid fibre," is contemplating an impossibility. He overlooks the fact that there is no such thing as a perfectly solid body. All substances, however dense, are composed of particles, having pores, or interstices, between them. Iron, as we know it, is quite an artificial production, bearing the stamp of mechanical agency. That form of it which bears the greatest analogy to the common forms of other metals is cast malleable iron, solidified from a state of fusion. In this state it is a crystalline metal; but, in the ordinary processes of preparing it, where it is first fused down in combination with carbon, and then the heat continued until the carbon is removed, and it loses its fluidity, the particles must be conceived to be much more irregular and artificial in their form. They are aggregated from a state of perfect division in the puddling-furnace into small lumps, which are further rolled together, until the mass has acquired, like a snowball, its conventional size. This is then passed through the rolls, being an aggregate of small irregular particles, not made so by the presence of the cinder, which neither first dispersed them apart, nor aggregated them together, but which, by remaining interspersed in any quantity, must vitiate the adhesion by its totally heterogeneous qualities. The quality and appearance of the iron so decarbonated and prepared is further modified by the mechanical means which are applied to reduce it to the solid form. The hammer, for obvious reasons, gives greater solidity than the roll, which procures constant and rapid elongation.

I conceive the general quality of bar-iron has not been improved since the substitution of the squeezer for the heavy hammer, in the first stage; but time is saved and fuel; and, therefore, there is economy; and it is the spirit of the age in all things, forced on by necessity, to consult economy more than quality. That less cinder is expelled by the new method (if it be so) is no improvement. The large strongly marked fibres of rolled iron present a contrast to the close texture of hammered iron, and this depends on the more intimate aggregation of the constituent particles. But that the existence of these particles, in either case, depends on the interposition of cinder, or that a strong substance, like iron, is bound together by filaments of a weak glass, is a notion truly absurd; nor can anything be more preposterous than making an analogy betwixt the cellular membrane of the animal frame and this brittle pigment. The membrane is as much stronger and tougher than the muscular fibre it binds together, as the cinder is weaker and more brittle than the fibre of the iron. A travelling botanist had better, instead of a book of blotting-paper to form his *hortus siccas*, carry with him a box of tin-plate; and, having interspersed his plants, subject them to a squeeze of the hydraulic press. Leaves and stalks are *modible*, yielding accordingly a notable result. When a bar of piled iron is cut sufficiently, and then bent until torn asunder, we do not find any flat dull surfaces exposed, corresponding to the faces of the piles, as would inevitably be the case had they been imperfectly united by a brittle glue; but even when the principal rents coincide, as they often do, with the welded edge traceable on the outside of the bar, we have bright metallic grooves sinking into the substance of the metal on one side, and bright metallic fibres prominent from it on the other.

There is nothing which indicates, in the remotest degree, a cementing together. Fibre is nothing more than this—that the particles which compose the mass have been forced to develop themselves in the longitudinal direction to the exclusion of every other. And these fibres present different appearances, according to the kind of mechanical force which has created them. They are not confined to iron. They are to be seen in every sort of wire; must we then suppose that in all metals there are sheaths of cinder to separate the particles? Is there *carbo-oxide* in copper, zinc, silver, or gold? Two qualities are requisite to enable a metal to exhibit marked fibre to the eye—tenacity, or ductility, and hardness to resist compression; so that there may be a fulcrum to the leverage which drags the fibres asunder. Softer metals, with more ductility than iron, yet evince less fibre, because they have less of the latter quality. If the iron is deficient in tenacity, the fibre does not appear, though the particles having been subjected to the same mechanical force, must have exactly the same mechanical arrangement. A bar of cast-steel breaks short across, because it has not tenacity; it, therefore, does not exhibit fibres, though the particles have been arranged by forging into the same longitudinal series as a bar of soft iron which has tenacity, and, therefore, does exhibit them. And this is probably the only difference betwixt granular and fibrous iron. I agree with Mr. Stephenson that it is very inconceivable how there can be a change in the interior arrangement of a bar of iron, from fibre to crystals. The only difference appears to be that, in the latter case, the tenacity is impaired, and we have short transverse sections, or fractures, of the bundles of matter which form the mass, presenting to the eye a sort of crystalline face, instead of that indented jagged edge which offers when the bundles have been dragged out *inter se*, and torn against the force of tenacity. A piece of dry wood, which snaps short across, and a piece of green wood, which twists into fibres, has the same solid arrangement of the particles. The fibres, as such, are, in either case, equally there; but the tenacity is gone in the former, which exhibits them in the latter.

Certainly, if Mr. Leighton considers the puddling-furnace to contain, not an oxidising or decarbonating atmosphere, but the reverse; he must be led to different conclusions from those ordinarily held, and affording a sufficient foundation for his erroneous views. I can have no objection to his impugning established notions; many good things have been overlooked by taking a position for granted. But, in starting a theory so novel as this, it is incumbent to bring forward some solid grounds for controverting the received opinion. If the atmosphere of the puddling-furnace contains any carbonic acid gas, it is an oxidising and decarbonating medium; if it is composed wholly of carbonic oxide, to the exclusion of carbonic acid, it is then a carbonising medium. How is the latter possible? The air is converted to carbonic acid in the fierce combustion at the bars. Where is it to find the carbon, after it leaves them, which is necessary to create the atmosphere of carbonising gas? Such an atmosphere is, therefore, impossible, as there is no other carbon in the furnace but what the iron contains—a very slender supply to double nearly the amount of fuel consumed during each heat. Let Mr. Leighton fill the bridge with coke, so that the flame may pass through the ignited carbon necessary to produce carbonic oxide, and see how the puddling would proceed then. The circumstances

under which Mr. Leighton states that he used carbonaceous matter in the puddling-furnace only prove that the heat was so intense, and such a rapid oxidising atmosphere passing over the iron, that it was oxidised as fast as it was decarbonated, and the surface required protection. A decrease of heat would have answered the same purpose as addition of carbon.

Mr. Leighton's question on the transparency of blast-furnace slag is easily answered, at least to a degree. Silica, alumina, and lime, when fused together, yield a perfectly colourless glass. But, if asked the cause of this, I can only reply, it is their property—it is a fact, but what is the hidden cause that enables them to transmit light, without decomposing it, I can no more tell him than why the addition of certain metallic oxides imparts the opposite property. Iron, in small quantity, gives a dull green; copper, the bright green of the emerald; cobalt, the blue of the sapphire; manganese, the purple of the amethyst; gold, the crimson of the ruby; silver and antimony, the tints of the topaz, beryl, and aquamarine; and the brilliancy of the tints increases with the heat of the fusion. Porcelain is a mixture of silica and alumina, partially fused, which gives its translucency. If thoroughly fused, they present a colourless glass, which remains so if cooled quickly; but, if the heat is very slowly withdrawn, it again assumes the opacity of porcelain. The same change occurs at the blast-furnace. Mr. Leighton must have observed that slag, which is transparent in small fragments, becomes opaque in large masses, which cool slowly. In the ordinary process of making fusible glass by the addition of alkali to silica, it is common to add a portion of lime to improve the working of the "metal." If the proportion exceeds 20 per cent. of the silica, greater heat is required to perfect the transparency of the glass, without which the lime will be seen in opaque white specks, pervading the mass from the centre toward the circumference. In the same way, a large quantity of lime, in the blast-furnace, yields a slag perfectly opaque in the centre, and in greater quantity, not even translucent in its small edges. A perfectly transparent—that is to say, a white—glass I never saw at a blast-furnace; for, if there is no metallic oxide dissolved in it, the presence of carbon will always communicate an amber tinge. If there is not lime enough to make a white opaque cinder, there is not enough to neutralise the destructive affinity of silica for oxide of iron. Glassy cinders, therefore, showing no excess of lime have always a minute portion of iron dissolved in them, giving a greenish tinge, and with the carbon a greenish brown. If the ore contains manganese, these tints are replaced by violet. But a black opaque glass, such as Mr. Leighton has named, is caused by iron. Less than 5 per cent. of oxide of iron gives a dark opaque slag, and the black opacity continues, and the fracture becomes less vitreous and more crystalline as the quantity of iron increases up to the surcharged products of the finery and the forge.—DAVID MUSHET: *January 1.*

ON THE MANUFACTURE OF IRON RAILS.

SIR.—I must again trouble you with a few remarks on Mr. Davis's letter of the 28th ult. It might have been expected that your last Journal would have contained Mr. Thorneycroft's rejection of the honour which Mr. Davis confers on him—viz.: that of repudiating the slanders of the "Staffordshire Ironmaster;" but, from his silence, it may be inferred, that he did not think it worth powder and shot, or he would have blown it into its proper element, especially as it was a simple creation of Mr. Davis's own brain, and not an emanation from Mr. Thorneycroft's pen—that is, if his letters to Mr. Davis mean what they say.

The principal reason, however, why I break silence, is to clear away the mist in which Mr. Davis has enveloped no less than 20,000 tons of rails. Now, what is the real matter of fact of this misstatement, of Mr. Thorneycroft's regarding the 20,000 tons of rails? Simply as follows: the London and North-Western Railway Company are to supply a certain house with a given quantity of old rails, which are to be re-manufactured into new rails; and, if I am correctly informed, the railway companies are allowed for their old rails just as much per ton as they might have been sold for (cash payment), quite irrespective of re-manufacture; again, they are to pay a given price per ton for the new rails—a price far exceeding the present quotation for Welsh rails. Now, one of two things in this transaction is very evident—viz.: that the railway company are throwing away the excess per ton above what they could have purchased Welsh rails for; or they expect a superior article, for which they are paying a superior price. Now, if this is not a *bona fide* purchase of rails, I wonder what is a *bona fide* purchase; and if this transaction has no reference to the market price of iron, then, pray, what transaction has?—what is it that regulates the market price of iron so much as the price of the raw material of which that iron is made? Then, in the case at issue, the raw material is given over at a fixed value, and on that value the price of the new rails is based; so that, with the single exception of the supply of the raw material by the same company who purchase the manufactured goods, the rail transaction is not only *bona fide*, but possesses every element which constitutes the regular commercial transactions of every day; therefore, instead of its helping Mr. Davis out of his red-short rail dilemma, it tells most fearfully against that and similar qualities of rail, no matter who are the makers: it is evident their days are numbered, and whether they meet the eye, on the permanent way, by an open exhibition of their finely extended fibrous texture, or grace the heaps of old rails at the several stations in the kingdom, one motto is due to them all—"Rubbish."

Mr. Davis has referred more than once to Mr. Dockray's trials of some rails made by the Rhymney Iron Company. Will Mr. Davis let us know in what public journal Mr. Dockray has detailed these trials; for until something of this nature is seen, Mr. Davis will not be offended if, in the absence of such proof, I apply the mild term of *fiction* to his facts, which I have no objection to withdraw on the appearance of authentic proof; at the same time I would deem it but honourable in Mr. Davis to withdraw the term *slanders* from my facts, especially when neither he nor any other man has attempted to disprove them. The public, however, have no need to rely upon either Mr. Davis's statements or mine, let them look at an article which appeared in the *New York Journal of Commerce* of the 21st Nov., 1849 [see *Mining Journal* of 22d Dec. last], and they read as follows:—"The English iron that is afforded here to our railroad companies at \$40 per ton, is so inferior in quality, as to be dearer than the domestic manufacture at \$50 per ton." Query, has not the most of the railway iron which has gone from this country to America been sent from Wales? *Jan. 10.* A STAFFORDSHIRE IRONMASTER.

ON THE FIBRES AND CRYSTALLISATION OF IRON.

SIR.—Observing in the *Mining Journal* much correspondence on this interesting subject, from parties who are, no doubt, from experience thoroughly capable of treating with it properly in a chemical point of view, I am induced to request the insertion in your columns of a few observations, in which I will endeavour to show the effects of mechanical operation in producing and varying the fibres and the crystals in bar-iron. If, for instance, we take a bloom from the furnace, when ready for the hammer, the fibre can be formed in any direction, or it can be so worked as to have no perceptible fibre at all. Merchant bar-iron, however, cannot be produced without possessing a fibrous texture, the peculiar action of the hammer or rollers during the process of elongation always producing fibres in the lateral direction of the bar, whether by tilt-hammer, rollers, or draw bench, and the more common the iron the coarser the fibre. The only production of metal without fibres, is when placed under the hammer to be merely flattened, similar to the operation of producing leaf gold, in which case the blow produces equal expansion on all sides, while it is in the process of lengthening that fibre is produced. To show this still more clearly, let a piece be cut from the end of a bar of merchant iron, the fibres, of course, running laterally, and passed once or twice through the rolls, sideways, or at right angles with the fibres; if it be now examined, it will be found to have lost its fibrous character, and to have become crystalline, as it is termed. Let the rolling be continued, and as the bar lengthens the fibres will again appear in a lateral direction, and, of course, at right angles to what they were previous to rolling. With respect to railway bars, it is evident there has not been that attention paid to the subject which its importance deserves. The great object appears hitherto to have been to get rails at as low a price as possible, paying little care to their durability. There is much real good merchant iron which would make bad railway bars; the action of the ponderous locomotive has not been considered as it ought to have been; rails which might stand a prodigious deal of work with engines of, say, 10 or 12 tons, become immediately torn up, with an increase of the weight to 20 or 25 tons at high velocities. The economy, however, now absolutely necessary to be infused into railway management will, among other improvements, produce good rails. Mr. Thorneycroft is a step in advance in Staffordshire; and I have no doubt Welsh rails will eventually be made as good, possessing, as that district does, if properly manufactured, good iron for the purpose. With respect to the crystallisation of axles, on which there is much difference of opi-

nion, I would observe, that it is caused in a manner similar to the above experiment, by the rubbing action being at right angles with the fibrous direction. It can be imitated artificially, by burnishing a piece of iron across the fibres, and when broken it will be found brittle and highly crystalline. I have thrown together these few observations, in the hope they may induce practical manufacturers of metal to assist in the discussion on the effect of mechanical operations on the structure of iron, and the development of means to discover the best for railway purposes. *Sydenham, Jan. 8.* J. T. CARTER.

GUTTA PERCHA APPLIED TO MINING PURPOSES.

SIR.—I beg to hand you a brief account of a trial we have given the above article for the purpose of gearing buckets, knowing you will readily give insertion in your valuable Journal to any communication intended for the benefit of the public. Our bottom lifts are 46 yards in length, being 17 and a 16-inch working barrel, working side by side, running a 9-feet stroke, and pumping upwards of 1600 gallons of water per minute. Our difficulties are very great, the water at every trifling stoppage bringing large quantities of sand along with it to the bottom level, the greatest part of which in such a stream is unavoidably pumped up; under these circumstances, the leather gearing seldom lasted above 36 hours, and oftentimes were changed in 24 hours, the consequence was, that for upwards of two years we were unable to prosecute our bottom workings. In July last I first tried gutta percha, and am glad to say with perfect success; we have it in regular use ever since, every bucket doing good duty for about 14 days, without changing; to its efficacy we owe much, having raised large quantities of lead ore, and made valuable discoveries, which we never could have accomplished by using leather for our bucket gearing. It is sold in pieces 2 ft. wide, and of any thickness and length; we use $\frac{3}{4}$ inch thick, and cut the gearing to the required sweep from the end of the piece, so that no portion goes to waste; we also patch up the old gearings, parts of which are generally put into work three or even four times. I have tried gutta percha and canvassed India-rubber for clack lids, neither of which would answer the purpose. *Fronfownog Mine, Mold, Flintshire, Jan. 5.* ROBERT WILLIAMS.

DETECTION OF LEAD, IN MINUTE QUANTITIES, IN WATER, OR OTHER FLUIDS.

SIR.—Hydrosulphuric acid (sulphuretted hydrogen), or, preferably, a solution of hydrosulphuret of potassa, is considered the best and most sensitive test of the presence of lead in water; but there is great difficulty in estimating the amount actually present, unless it be in sufficient quantity as to be capable of being collected and weighed. The following method was adopted by me last week in testing a water supposed to contain lead, and proved to do so, and, although not, strictly speaking, correct, is, nevertheless, as great an approximation to truth and accuracy as can well be conceived, and sufficiently near for all practical purposes. Suppose we take a half-pint tumblerful of the suspected water, and add from 1 to 3 or 4 drops of a solution of hydrosulphuret of potassa; if lead be present in large quantity, it will be immediately precipitated in black flocculi; but, if small, there will be no precipitate, but the liquid will be more or less discoloured of a dirty brown.

Having, in the above experiment, sought for and discovered lead by means of the hydrosulphuret, we now, as a comparative and confirmatory experiment, reverse the order of testing by using a solution of acetate of lead of known strength. For instance, make a test liquor by dissolving in 12½ ozs., or 100 drams fluid, of distilled water, 1 grain of acetate of lead; take another half-pint tumblerful of distilled water, and add from 1 to 3 or 4 drops of the hydrosulphuret of potassa solution, and place both vessels in strong light, with a piece of white paper at their backs; then, with a graduated syringe measure, or a nicely stoppered dram vial filled with the test liquor made with lead, drop in so much as will bring up the colour to the required depth of shade as that of the original water under examination, every drop of this test liquor answering to $\frac{1}{1000}$ of a grain of lead salt. This method of testing, it will be perceived, applies to other substances besides lead.—JOHN HORSLEY: *Ryde, Isle of Wight, Jan. 9.*

SAFETY FROM SHIPWRECK.

SIR.—I enclose an extract from a letter addressed by Mr. Carte to the editor of the *Gateshead Observer*, dated 26th December last, from which you will perceive that he has adopted my plan of launching a float from the wreck to the shore, to form a line of communication. It is just a modified version of that I had proposed in the *Mining Journal*, of 6th January, 1849, p. 10; and, as far as I can discover, without any reference to that communication, or the slightest allusion to my name. I may well complain, when I consider how many of my inventions and discoveries have served as PATENTS for not a few individuals, or been otherwise adopted by parties without acknowledgment. J. MURRAY.

Portland-place, Hull, Jan. 9.
Extract:—"In the small book which I enclose, you will find a cut representing my life-buoy rigged with a triangular sail, supported by a mast, and above this a topmast. The latter consists of a porfire, which will burn twenty minutes, and, once ignited, cannot be extinguished by the waves or spray. This is to be used at night. Should a vessel strike 500 or 600 yards, or more, from the land, one of these buoys, thrown overboard with a light Manila line, which will float, will ride on the waves, and reach the shore in a very short time. This very useful and important addition to my life-buoy only costs 15s., and might be of the most essential service, especially at night."

VENTILATION.

SIR.—I repudiate all manner of "stoves," of whatsoever kind they be, whether made of cast or wrought-iron, and for this plain reason—they, one and all, decompose the aqueous vapour of the atmosphere, hygroscopically suspended therein, and, appropriating the oxygen, liberate the hydrogen in combination it may be with sulphur, and even arsenic, as well as other noxious materials. They also char and decompose the organic matter, vegetable and animal, contained in the atmosphere. These are the sources of the noxious effluvia incessantly arising from their surfaces, and what are oftentimes almost insupportable. Our open fire-places are the chief guaranties of public health.

As to the question of warming public buildings—such as chapels and churches—I confess I am disposed to give decided preference to heating by hot water, on the tank system. Its modification and equalisation can be thus best secured.—The tank should be central, and might be supplied with lateral pipes, radiating in every direction.

In reference to the act of ventilation, it is obvious that the impure air and noxious effluvia, which rise to the ceiling, and are collected in a central dome, in the case of church or chapel, must be conveyed by a pipe from thence to the fire-grate in the vestry. In the case of rooms without fires, and in summer, such pipe of communication should have its terminus in the kitchen chimney, or, still better, in a small furnace, specially provided; this, of course, applies to assembly-rooms and similar buildings. A few folds of wire gauze over the orifice of the pipe, terminating in the kitchen chimney, would intercept smoke, if to be apprehended, or the pipe might be extended to the top of the chimney, and, being heated by the warm atmosphere it traverses, would discharge the impure air it conveys at the upper orifice.

The radical error committed in ventilation consisted in the supposition that orifices, or valves, in the ceiling of a room, or the roof of public buildings, must, of necessity, discharge the impure air and noxious effluvia lingering below. There cannot be a more mischievous or fatal error, for the cold air must, of necessity, enter, and descend, on the simple principle that air, more cold and dense, rushes to, and mingles with, a warmer and rarer medium; and though it be quite true that heated air and gases, however heavy, at a mean temperature, expanded by heat, will ascend, it is equally obvious that they cannot escape through the same orifice by which air, reduced to a lower temperature, enters; for this would be to make contraries synchronise. That such openings to the atmosphere are injurious, is patent in this, that the deleterious air, lingering in contact with the ceiling or roof, must, by being cooled down, be precipitated, and by the currents superinduced, be mingled with the atmosphere below, and brought within the sphere of respiration. Precisely the same observations and reasoning apply to a moveable pane, or panes, in a window-frame; cold air from without rushes into the warmer apartment, while the impure air lingers, meanwhile, obstinately near the ceiling. I need scarcely add that in the case of assembly, and other public rooms, the central dome, towards which the noxious air flows, by being connected, by means of a pipe, with a very small furnace immediately over the dome (this furnace being supplied, as a matter of necessity, with a chimney for the discharge of the products of combustion), would subvert the purpose required.

These principles apply to vessels of every grade; above all, are they imperatively required in emigration ships, and in the case of steamers the process is facilitated. Under these simple provisions the catastrophe of the *Londonderry steamer* would not have occurred. The rarefied source

and focus of heat act the part of an *exhausting pump*, and become an ample substitute for it. It was not my purpose to enter into any detail in reference to the paramountly important subject of ventilation, and I shall, therefore, conclude this hasty generalization in my next. J. MURRAY.
Portland-place, Hull, Jan. 10.

THE BAROMETER.

SIR.—While I confess, with Mr. Negretti, that I also was rather surprised at Dr. Murray's remarks on the mercurial barometer, yet I must say that I do not think his own experiments are so very conclusive of the inaccuracy of the aneroid barometer; as under the same circumstances as experiments 2 and 3, I should imagine that the very best mercurial barometer, without a thermometer attached—and, therefore, without the means for correcting the expansion, or contraction, of the mercury—would be quite as inaccurate as the results of the experiments he describes. Mr. Negretti seems to admit the value of the sympleometer—an instrument about half the size of the mercurial barometer, while the aneroid is but with the size and weight of the mercurial barometer; and, consequently, if the aneroid equals in accuracy the latter, it ought to be considered a valuable instrument.

The mercurial barometer, however, as it is now produced by the first makers, is, I might almost say, a perfect instrument; and I can safely assert from experience that any one consulting it, along with the hygrometer, and observing at the same time the course of the wind, will be able to foretell with much accuracy the kind of weather there will be within a limited time. Having no interest in the making of one instrument more than another, the above few remarks will, I trust, be assigned to their true cause.—WILLIAM BIRKMYRE: Jan. 10.

HOT AIR v. STEAM.

SIR.—Your columns of the 5th inst. contain two letters upon the subject of the hot-air engine. The first is from the pen of Mr. Craddock, and I must say that it is written in a strain of petulant insinuation, altogether unbecoming a man of science, and a civil engineer especially. Mr. Craddock, however, does not attempt to disprove any of my statements by an appeal to direct argument. He sees that the task is one of some difficulty, and, therefore, like a wary general, he is ready with an excuse. He says:—"I shall demand to be excused entering into calculations and comparisons, so vague and destitute of that similarity of circumstance and directness of comparison, when applied to the question in hand, as are those brought by him to support his assertion."

Such being the case, I have nothing further to say upon the subject, and I, therefore, turn to the epistle of Mr. Weston, which, though in substance opposed to my views, is really written in a very good spirit. Mr. Weston, instead of attempting to offer any dictatorial or officious advice, proceeds very fairly to grapple with the facts of the case, although, in doing so, I am bound to say he has not succeeded in establishing the point for which he strives. In proof of this, I will quote his own words, and show how erroneous are his conclusions. He says—"A cubic foot of air at 30 lbs. acting against the atmosphere, has an effective initial force of 15 lbs., and when expanded to 2 ft. is in equilibrium with the atmosphere; and during the act of expansion will only exert a mean effective force of rather under 6 lbs. per inch—two-fifths only of the initial pressure; so that the mechanical value of a volume of air at the pressure stated, is at the most but one-fourth."

Now, the question here stated is this—What is the mean pressure of a cubic foot of air acting through 12 inches, with an initial pressure of 30 lbs., and being cut off at this point, subsequently allowed to expand through another 12 inches? The mean pressure is 25.395 lbs. I will not, in this instance, ask Mr. Weston to depend upon any calculations of mine; but I will refer him to the printed "tables of mean pressure" in Tredgold, Farey, Bourne, and other practical writers, whose statements, I presume, he will not be inclined to contradict. Now, if, from this mean pressure of 25.395 lbs., we deduct 15 lbs. for the constant resistance of the atmosphere through the 24 inches traversed by the piston, we have, for remainder, 10.395 lbs., which is the clear mean pressure required, and not "rather under 6 lbs.," as stated! It is needless for me to remind your correspondents that, if the fact itself is erroneous, the inference which is deduced from it is so also.

I, therefore, think it is quite unnecessary to say more upon the subject, as this statement, with regard to the average pressure of the air in the cylinder is brought forward by Mr. Weston as the leading feature of his communication. It is, in fact, the main position upon which his whole argument hinges, and it is found wanting. I shall only observe further, that the advocates of high-pressure steam, at 200 lbs. to the inch, before spending more time in the elaboration of their plans, will do well by carefully perusing the pamphlet recently published, upon this important subject, by Messrs. Seaward and Capel, and written by them in reply to certain questions put by the Lords of the Admiralty to the leading steam-engine manufacturing houses of this country.

Though they admit therein that the extended use of the expansive principle in working steam has been productive of considerable advantage, yet they think, at the same time, that "the real advantages of the system have been greatly over-rated;" and they expressly say, in answer to the terminal question—"We strongly recommend that the steam employed in the navy should not be of greater pressure than 10 lbs. per square inch, or, in extreme cases, 12 lbs. to the square inch. Any material increase to the latter pressure will be attended with considerable risk, without any adequate advantage." A judicious and comprehensive abstract of this pamphlet is given in No. 1377 of the *Mechanics Magazine*.—ISHAM BAGGS: Jan. 10.

MR. SHEPHERD'S RAILWAY REGENERATION.

SIR.—In these dividendless times, railway management is a subject of absorbing interest with shareholders; and any proposal which holds out a prospect of the return of those good old times, when "things were made pleasant" by the receipt of 8 or 10 per cent. dividends, is listened to with attention. There surely never was, or ever will be, such—

"A strange harmonious inclination,
Of all degrees to reformation."

as is now displayed in all matters pertaining to railways. To believe one tithe of what is said as to mismanagement requires no little credulity, and to have confidence in the voluntary plans of the reformers, needs a faith as implicit as illimitable. The glory of the boards has vanished, and the peltings of a pitiless storm assail the unhappy directors, do what they will to appease it. "Disclosures" are as ripe as blackberries, and integrity is as scarce even as dividends. Reckless extravagance stalks unabashed and unchecked among the lines, offices, workshops, engine-houses, and sheds; and as for the engines, they are over-fed and under-worked, whilst the officers, labourers, and artisans do little or nothing for the enormous salaries and wages they receive. Such a state of things, say the reformers, is not to be endured; and forthwith sit down to write to the boards and the public on these intolerable evils, and to insist upon the immediate adoption of remedial measures, by which an immense saving is to be effected by some notable scheme of their own devising. Be the evils complained of real or imaginary, and the panacea really good or perfectly impracticable, it matters not; if the directors dare to dispute its expediency, or hesitate in adopting it, they are denounced to the "poor shareholders" as undeserving of confidence. With imperfect means of observation, the reformer claims to be better informed than the officers of the company, and demands that his *ipse dixit* should supersede opinions formed on practical experience. Dogmatically insisting on his views, he refuses to permit the directors to exercise their judgment, or to doubt the perfectability of his plan; it is enough that he is assured that a great saving can be effected by it, and surely this ought to satisfy the most corruption-loving board that ever mismanaged a railway.

Such of your readers as have waded through one-half that has been written on this subject during the last year, and have any practical experience in the working and management of railways, must acknowledge that these strictures are neither undeserved nor exaggerated. That great abuses, and gross mismanagement, have existed on railways, and that there is still room for improvement, is too great a fact to be doubted; yet there is as little doubt but that the evils of the system have been grossly exaggerated; and that after "exhausting old" faults, reformers have not scrupled "to imagine new," and treat them as veritable facts.

With these prefatory remarks on railway amateur reformers, I will now, with your permission, offer a few observations on Mr. Shepherd's plan of railway regeneration, as published in your last Journal, which, as coming from a civil engineer, who has "devoted much attention to the management of railways, both here and on the continent," deserves our serious attention and impartial consideration. As far as I can comprehend the plan, it appears simply to be the substitution of piece for day-work in the

workshops—to contract with the drivers for the running of the engines—and to contract for the maintenance of way in lengths of 20 miles, the contractor of each length to furnish all the police and signalmen on their respective lengths. Mr. Shepherd has "no hesitation in saying that, if these suggestions are carried out, the working expenses of railways will be reduced from 39 to 25 per cent." The regeneration of railways, therefore, appears to consist in a saving of 14 per cent. on the working expenses, and is not such a difficult thing as the uninitiated might imagine. The prospective economy to be realised by this "regeneration" is certainly not very great, and allows but a small margin for contingent and unforeseen casualties, ever attendant on the reduction of theory into fact. As far as railways are concerned, civil engineers have little cause for congratulation on the correctness of their estimates, nor can they justly blame the "poor shareholders" if they are somewhat tardy in giving implicit credence to them. Aside from other considerations, and viewing Mr. Shepherd's plan in relation to the results alone, the benefits to be derived from it are too doubtful to render its adoption expedient, and fully justify its rejection by the boards to whom it has been submitted. Were it needful to enter more into the details, there would be little difficulty in showing that there are other valid objections to the plan, and that the alterations proposed are quite as likely to increase as to diminish the expenses; whilst the safety of the passengers would be more hazarded, and the working of the staff would be rendered more complicated and difficult. With every possible respect, therefore, for Mr. Shepherd's professional ability and experience, I hope the directors of the railways in which I am interested will not "regenerate" them until some better and more feasible plan be proposed for such a purpose.—A SHAREHOLDER: Jan. 8.

PATENT TIMBER TRACTS ON TURNPIKE-ROADS.

RESPECTED FRIEND.—I am glad to see that my communication on timber tracks for public roads, which appeared in your Journal of Feb. 24th, 1849, has excited the attention of a portion of the colonial press. I have observed with much satisfaction a long leading article in the *South Australian paper*, published at Adelaide, occupying the greater part of two columns, commencing with the following introduction:—

On examining Mr. Motley's article, we find that the first few paragraphs will suffice to convey to our readers an idea of his plan; the remainder is wholly occupied with a minute detail of his process, which has little interest to unscientific readers. We direct public attention to the following statement, which it must be admitted is of the highest interest and importance to the inhabitants of this colony.

They then insert copious extracts from my communication; after which they make some very judicious and sensible remarks on the duty of Government towards the colonies, such as I think deserving publicity, which are as follows:—

The great advantage possessed by modern colonies in their onward progress, as compared with the mother countries in their infancy, is that they have not only a virgin soil and large extent of country, compared with the population, but have access also to improvements in art, which have been the painful growth of centuries, to aid them, and the colonists, it is evident, will show their wisdom or their folly, according to the judgment exercised in choosing from the wonderful treasury of art provided by men of genius and science, those assistants to labour and enterprise which are best suited to the present duties of the colony. The colonists are about to apply to the Legislature here for permission to introduce into the colony the expensive system of English railways—a system which, in consequence of the price of labour being double that in England, is, we fear, entirely inapplicable. In those circumstances, it becomes a question of no small importance for our legislators and the colonists generally to consider whether another system, better suited to our means and peculiar resources, cannot be adopted. It is in order to induce practical and impartial men to consider this question, that we have called their attention to the plan proposed by Mr. Motley, which, in our humble opinion, seems peculiarly adapted to the colony, both on account of its cheapness, and because hard work, which the province possesses in such profusion and excellence, is the principal material used. Governments of civilised nations have generally taken main lines of road under their particular care, both as an assistance to their own operations and as a boon to the governed. The Government of this colony, while they wish to leave the making and maintaining of the district roads in the hands of the inhabitants of districts, are disposed still to reserve under their own care the main lines to the various districts. This being settled, the next question to consider is, how can this duty be most effectually accomplished by the inefficient and, in the end, most expensive system in common use, or by the improved plan recommended by Mr. Motley? We should wrong the good sense of the Government and the colonists if we assumed that any plan but the best and most improved, if fully appreciated, would be adopted; and we, therefore, earnestly recommend a careful consideration of the latter plan by our Legislators. The surplus revenue, as we have before shown, may be used to secure high profits to a few individuals. It should be remembered, that any tolls collected for such improved roads as we have described could be easily collected, would be cheerfully paid, and would form a most lucrative branch of revenue, which could, if necessary, be applied in extending the lines over the whole country. We do not know one solid reason why Government should not improve our roads in the best possible manner, and there are a thousand good reasons why they should do so without loss of time. Should the colonists agree with us in the foregoing observations, they ought to lose no time in preparing measures on the subject, as it is now past the time when the Council assemble, and the ensuing session will probably be opened in a few days. Every one is aware that now-a-days Governments are so timorous, so unenterprising, or so stupid, that they can do nothing till there is a pressure from without; and, therefore, it becomes an imperative task and necessity when any reform, or any new and improved system is required, that the people themselves should take the initiative, enlighten their rulers, and force them to do their duty.

But some objectors may say, why interfere with private enterprise? Why should the Government do that which is quite out of its sphere? It appears, then, that the sphere of Government is only to do those things that are inefficient and old-fashioned. When any of the operations in its sphere are so perfectly as to secure high profits to a few individuals, the Government, on behalf of the public, are, forthwith, to interfere. When such improvements are effected, there is the greater reason why they should be adopted, for then the whole community are certain to share the full advantages. The profits are preserved in the pockets of the poor in place of going to swell the fortunes of the rich. When Governments are able, they ought at once to promote internal communication by the best and most efficient mode, in place of doing it in the worst way, or waiting till it suits the convenience of capitalists to do it rightly, and then render profits to a few individuals. It should be remembered, that any tolls collected for such improved roads as we have described could be easily collected, would be cheerfully paid, and would form a most lucrative branch of revenue, which could, if necessary, be applied in extending the lines over the whole country. We do not know one solid reason why Government should not improve our roads in the best possible manner, and there are a thousand good reasons why they should do so without loss of time. Should the colonists agree with us in the foregoing observations, they ought to lose no time in preparing measures on the subject, as it is now past the time when the Council assemble, and the ensuing session will probably be opened in a few days. Every one is aware that now-a-days Governments are so timorous, so unenterprising, or so stupid, that they can do nothing till there is a pressure from without; and, therefore, it becomes an imperative task and necessity when any reform, or any new and improved system is required, that the people themselves should take the initiative, enlighten their rulers, and force them to do their duty.

The more I reflect upon the adoption of timber tracks, the more convinced I feel of its importance. One of the most eminent mail coach contractors in the kingdom (residing in Bristol) once offered a party, that if they would lay down on the side of the road from Bristol to Bath (a very undulating road) a perfect track, he would contract to find coaches, horses, and drivers, and deliver for them passengers from centre to centre of each city (12 miles) at 3d. each. Now, if he could do this with horses (and it may be presumed he was a good judge), who will deny that the same might not be done at less than half that amount by the power of steam?

When the intoxicating excitement occasioned by high speed becomes moderated, so as to allow the faculty of reason again to expand, there will then be some chance of gaining public attention to the subject; for I am persuaded that, to at least 8 out of 10 who travel, the economy of money will be preferred to the economy of time, especially if greater accommodation and convenience is obtained, which cannot be disputed will be the case to that portion of the public located on and near the public roads. Therefore, it is my opinion that, let talented and eminent engineers, let shrewd and experienced secretaries, let wealthy and influential directors, for the present, jointly and severally, cook their accounts as they please, and paint their statements in the most glowing colours, yet to the disastrous condition and complexion I have held up to view, extravagantly constructed railways must approximate at last. THOMAS MOTLEY.

Stingate, Lambeth, Jan. 7.

P.S.—Who can doubt the possibility—nay, probability—that at no distant period the proprietors of property contiguous to the turnpike-road from Liverpool to Manchester (a comparatively level road), and others interested, will be induced to promote its adoption, by which means, even with horse-power, the public could be conveyed at one-halfpenny and one penny per mile, at the speed of 12 miles per hour, and yet afford from 20 to 30 per cent. profit; but with steam-power, at, say, from 1s. to 2s. each the whole distance, 36 miles, can it be reasonably imagined that the public would prefer giving double or treble for the sake of saving 1½ hour, especially when that difference may be gained, in consequence of the greater frequency of communication. Time, I have no doubt, will prove the accuracy of my opinion—viz., that railways of considerable length ought not to exceed the cost of 14,000l. to 15,000l. per mile; and that, consequently, all ordinary railways costing above that estimate, will be proportionally diminished in value: thus, if an ordinary railway cost 45,000l. per mile, according to my ideas the value of even the most favourably situated, will not exceed one-third the paid-up capital, and, in some cases, be absolutely valueless, which is now progressively manifesting itself on many even of the favourable lines.

METROPOLITAN SEWAGE QUESTION.

SIR.—It will not be denied that the above subject has now attracted a high degree of public attention, inasmuch as the health, even the very existence, of thousands of persons is depending upon the manner in which the commissioners shall exercise the vast and truly important duties with which they are charged. Their predecessors, before quitting office, invited, by public proclamation, the scientific talent of the country to send in plans and schemes for approval; and so promptly were they answered, that no less than 180 suggestions, accompanied with illustrative drawings, have been submitted to the commissioners, who have printed concise statements of them for their own information, and also the public, who now anxiously

await their examination and final report; for, aided as they must be by such a host of scientific and practical knowledge, there can be little doubt that the authority of the commissioners only extends to the sewage; therefore, the inhabitants of London must not be surprised if they are left to shift for themselves with regard to pure water for drinking and other purposes, unless the dealing with the sewage shall inadvertently or incidentally influence the supply of the latter, so essential to the health and comfort of the public at large. According to the published reports of the commissioners, and also the suggestions of Sir John Burgoyne, the grand question to be determined is, which is of most importance—viz., the draining of the sewers by flushing, or otherwise, or the conversion of their contents into a profitable trade, in the shape of manure? Can there be a doubt which is most important?

The object of this letter is to discuss these two principles, for they are completely at variance with each other. The more effective the flushing in point of salubrity, the more destructive to the principal of productive manure. If the manure is to be made the subject of a profitable speculation, then it must not be let into the sewers, but must be preserved, and conveyed away in carts, or otherwise, in its least liquid form. As to dosing, or otherwise dealing with it at the mouths of the sewers, under all the irregular intermixtures of water, the project seems to defy all practical accomplishment. In order to compass this supposed grand object, it has been proposed to collect all the sewage into two or more grand tunnels, of several miles in length, with all the paraphernalia of valves, shafts, engines, settling ponds, pipes, and other contrivances, at an expense of hundreds of thousands of pounds, and the consumption of years of intricate excavation—the said tunnels having a fall, according to their respective authors, of from 2 ft. to 6 ft. per mile—the sewage of London to discharge itself along these miles in length, at the fall of 1 in 1000, and then to be pumped up by steam-engines. Practical persons such ponderous schemes cannot but be thought wanting in the intrinsic requirements of a great public measure, and however plausible and ingenious they may appear on paper, cannot be divested of their incapability of giving that certain and immediate relief which the emergencies of the case demand. In short, to endeavour to convert the nuisance of the sewers into a manufactory, or to delay prompt measures of relief, cannot do otherwise than to increase the evil, and predispose this city to a depopulating malarial, similar to that which has just departed, perhaps only to return with increased violence. Let us turn, then, from this visionary and unprofitable subject to some wholesome, cheap, rapid, and effectual relief, some plan that will take immediate effect upon the present sewage arrangements, and be of a nature which can be comprehended, and which will be supported by the bulk of the community—some plan which is certain in its results, and which can be carried out in a given time, and at a given cost—a plan which is divested of long tunnels, of chemical processes, of vast and incalculable expenditure, and of fatal delay. Under the aforesaid impression, I have taken the liberty of respectfully submitting such a plan to the judgment and discrimination of the commissioners and the public, and I simply claim for it the following qualifications—viz.: 1. Simplicity of conception and of execution. 2. Certainty of effect, both as to prevention and cure. 3. Economy of principle. 4. The giving adequate supplies of good water for cleansing purposes, and of preventing, in a very great degree, the pollution of the Thames.

1. *Simplicity of Conception.*—The leading feature of this plan consists in the sinking of shafts at certain central and elevated points in the metropolis, at the level of the River Thames, which shafts shall facilitate water-lifts to still more elevated parts, and of connecting those shafts with the said river by a tunnel of ordinary dimensions—say, 4 feet diameter; upon the top of this shaft to erect a powerful steam-engine, for the purpose of raising an ample supply of water, to be either turned upon the streets, or into the sewers, there to be guided from place to place at command. Then, for the purposes of raising the water, the boilers of this engine to draw their air entirely from the sewers, so that the atmosphere must rush in at every mouth and grating, and, together with the air of the sewers, be discharged at the top of the chimney, instead, as at present, being inhaled by the inhabitants, thereupon producing the most natural and perfect ventilation extant.

2. *Certainty of Effect.*—The torrents of water which could be, by this measure, introduced into the sewers would, undoubtedly, remove and discharge the primary cause of the existing evil, especially when aided by the ventilation of the boiler fires, thereby preventing what now forms the chief subject of complaint—viz., the accumulation of filth, and the consequent malarial and pestilential atmosphere which so detrimentally upon the health of the city.

3. *Economy of Principle.*—Unless a scheme of this nature, of a few titles be invariably brought up by the flood. I, therefore, respectfully submit that this cleansing power being always at command, may be most beneficially managed in the following manner:—Let the outfall sewers be furnished with doors, so contrived as to stop back, as much as possible, the sewers during each flood tide. That, immediately after high-water, the said doors be all opened, whilst the pumping engines are simultaneously set to work, thus driving the great bulk of the filth, from London into the ebbs of the river, and a few tides be inevitably carried out to sea. It is also deserving of remark, that the daily use of the cleansing power would entirely prevent that accumulation of filth which naturally takes place during the dry weather, and which is, as a matter of course, driven into the tide-way, en masse, whenever rains, or the melting of snow occur, that part of it so driven in during flood tide being, as a matter of course, made to mix and adulterate the water in those parts operated upon by the water companies.

And, inasmuch as the system to this system is peculiar, and consists in the non-requirement of any Act of Parliament, inasmuch as the waters of the Thames are free, and the corporation already possess abundant powers for the execution of the tunnels, and the erection of engines; whereas most of the complicated and gigantic schemes submitted to the metropolitan commissioners would demand parliamentary powers, which would not only be met by serious opposition, but which, in their procurement, and the execution of the works, must necessarily be attended with vast delay and expense. In this particular, therefore, the scheme I propose is clear, and of a few titles be inevitably brought up by the flood. I, therefore, respectfully submit that this cleansing power being always at command, may be most beneficially managed in the following manner:—Let the outfall sewers be furnished with doors, so contrived as to stop back, as much as possible, the sewers during each flood tide. That, immediately after high-water, the said doors be all opened, whilst the pumping engines are simultaneously set to work, thus driving the great bulk of the filth, from London into the ebbs of the river, and a few tides be inevitably carried out to sea. It is also deserving of remark, that the daily use of the cleansing power would entirely prevent that accumulation of filth which naturally takes place during the dry weather, and which is, as a matter of course, driven into the tide-way, en masse, whenever rains, or the melting of snow occur, that part of it so driven in during flood tide being, as a matter of course, made to mix and adulterate the water in those parts operated upon by the water companies.

I will, therefore, conclude with humbly submitting that the system here described possesses the virtues of simplicity of execution, certainty of effect, both as to prevention and cure, economy of principle, and, lastly, that it gives great facilities for the purposes of washing and cleansing, whilst it immediately effects the purification of the river water.

With regard to the subject of manure, I may simply observe that, should some new and extraordinary system be discovered of manufacturing the manure of the sewage, the proposed arrangements will still be highly advantageous in affording a constant cheap supply of water for the cleansing of streets, and for sanitary purposes. It is not my province to condemn the project of the saving, or manufacture, of manure, because I conceive it practicable in certain of the suburban districts; nor do I mean to deny that certain of the metropolitan districts could not apply my system advantageously, for I have always contended that no single scheme will apply to every locality in the metropolis; and should it ultimately be superseded by some other more valuable invention, the authorities, instead of repenting, may feel gratified that they have at least laid the way to substantial amendments of the present unwholesome state of the great metropolis as to sewage, and the proper supply of wholesome water. MATTHIAS DUNS.

Newcastle-on-Tyne, Jan. 1.

ANTI-CORROSION AND WATERPROOFING COMPOSITION.

A patent is in progress by Mr. C. Reynolds, for a new mode of water-proofing leather, and protecting metals from oxidation. It is very simple, consisting in the mere application of a peculiar unguent, which requires occasional, but not frequent renewal, and which promises to supersede the various nostrums which have from time to time been brought before the public for effecting this important object. It is now used by the Great Western Railway for their carriage leathers, and the bright portions of their engines. It is also employed at the Tower for the superficial preservation of the extensive collection of armour which is there deposited. It has been recently adopted at the Albany barracks, and elsewhere, for furnishing, and protecting from atmospheric moisture, the cuirasses and steel trappings of the military. It promises to prove of great advantage in steam-vessels, and wherever bright machinery is used. The preservative power of galvanism is quite inapplicable to the protection of metals, unless they are immersed in a fluid conductor, which, in practice, is rarely the case. The process of the Galvanised Iron Company is only applicable where the surfaces are dull, and does not depend for its efficacy upon any direct and manifest electrical action, but simply upon the defensive tenacity of the corroded superficies.

PATENT IRON "FOSTER FIRE" OR FUEL CAGE.—This invention, which simply consists of a small machine of cast-iron, in the form of a bell with bars, is to be placed in a grate, and the fire lit in the ordinary manner; the vacuum so created, by aid of a small pipe fitted on the top of the fuel cage, prevents the chimney from smoking. The peculiar advantage derived is, that from the great draught, coke or anthracite can be used in the fuel cage, while small coal, which can be obtained at one-half the cost, can be burned in the other part of the grate, and give a warmer, quicker, and more brilliant fire than at present combining, at the same time, a greater degree of heat, with a considerable saving. Used on a large scale, it will be found the most economical and comfortable method of warming churches and large buildings, thereby avoiding the present unhealthy means which are used for those purposes. Several of the nobility and gentry have availed themselves of this invention.

IRON SHIP-BUILDING IN CORK.—Mr. Pike is building an immense iron vessel at his iron ship-building yard, Hargrave-quay. She is intended for the New York trade when completed, which it is expected will be in June next, and is to be commanded by an experienced mariner, a native of this city—Captain Hall. This vessel will be steam propelled, and her tonnage is computed at 1400 tons.—*Cork Constitution*.

A LIEUTENANT OF DRAGOONS CURED OF RHEUMATISM BY HOLLOWAY'S OINTMENT AND PILLS.—This officer, who is in the 4th Hussars, states that Holloway's pills and ointment have cured him of rheumatism which appeared to be incurable, as neither sea bathing, vapour baths, nor preparations of iodine as sure remedies did him any good, and the treatment of the doctor, after several months' trial, was without success. At this juncture he commenced taking these pills, and rubbing the ointment into the afflicted parts twice a day, which effectually cured him in the course of six weeks.—Sold by all druggists, and at Professor Holloway's establishment, 244, Strand, London.

THAMES TUNNEL COMPANY.

Five number of passengers who passed through the Tunnel, in the week ending Jan. 8, was—No. of passengers, 20,302.—Amount of money, £54 11s. 6d.

CERRO DEL BOTE MINING COMPANY.—PERSONS desirous of TAKING SHARES in the above COMPANY, are requested to make early application (addressed to the committee, either at the company's office, 13, Austinfriars, or at that of John Taylor, Jun., Esq., 6, Queen-street-place, Upper Thames-street), as the subscription list will shortly close.

CONSOLIDATED COPPER MINES OF COBRE ASSOCIATION.—At a Half-Yearly General Meeting of the proprietors of the association, held at the offices of the company, 26, Austinfriars, the 5th day of January, 1850, **RUSSELL ELLICE, Esq.** (Chairman), in the chair.

The advertisement convening this meeting, and also a special meeting for the purpose of increasing the reserved fund, having been read, the following report was read:—

REPORT.
The half-yearly meeting is called for the purpose of having a sketch of the affairs of the company laid before the proprietors, and to elect two directors and an auditor in place of those who go out by rotation, and the directors will attend themselves of the meeting to declare a dividend. They are happy to say that the affairs of the mines go on prosperously. There is a slight falling off in the produce to the end of November, 1849, as compared with 1848, the produce of 1849 having been about 18,700 tons, against 19,700 tons in 1848. This has arisen from the circumstance of an increased demand for labour on the sugar and coffee plantations, in consequence of greater animation in the market for those articles, which has led to the employment of some of the people from our mines; and the agents being unwilling to raise the wages, their places had not been supplied. This shorter quantity has not arisen from any want of ore in the mines, and the quality is somewhat better than that of 1848, so that the directors, according to the summary of your affairs up to the 31st December last, now produced, after deducting the reserved fund, and providing for their liabilities, are enabled from the balance to declare a dividend of £3 per share, exclusive of income-tax, payable on and after Thursday, the 17th instant.

The directors mentioned in their last report that they looked forward to an amicable settlement of all differences with the St. Jago Company, and they have no doubt in a very short time that expectation will be fulfilled, but they did not intend again to advert to the subject till after its final settlement. A statement, however, has obtained publicity, that the directors of that company had £5000 to receive from this company as a compromise of all differences. The directors, in consequence, think it becomes proper for them to inform the proprietors of this company that, in return, the St. Jago Company are to give up to, and affect by the business of the mines, the possession of the St. George Mine, with all its machinery, shafts, appurtenances, and erections.

It is considered that the possession of that mine will be of great advantage to this company, especially by facilitating the raising of the ore from the church ground, and from which the directors look forward with confidence to a considerable increase of produce during the next half-year.

Mr. Bankart's smelting process has not been long enough in operation to judge of its ultimate efficiency. The copper he produces is of excellent quality.

It is pleasing to state that the business of the mines continues to be conducted there by the agents to the entire satisfaction of the directors.

Two directors, Russell Ellice, Esq., and Walter Shairp, Esq.; and one auditor, Alexander Bruce, Esq., go out of office by rotation at this meeting, and being eligible are candidates for re-election, for which purpose, at the close of the meeting, a ballot will take place. At the termination of this meeting a special meeting will be held, for the purpose of passing a resolution to rescind that clause in the Deed of Settlement which limits the reserved fund to £20,000, and to authorise the directors to add to that fund 5 per cent. on the amount of the present, and on each future dividend, until it reach the sum of £40,000, irrespective of the accumulation of interest thereon.

This subject was mentioned in the following terms to the general half-yearly meeting in July, 1842, and was received with approbation, but succeeding events prevented its being carried out. "The directors propose, with the sanction of the proprietors, to appropriate 5 per cent. on the amount of this dividend, and the same on each succeeding dividend, towards the gradual increase of the reserved fund. When the Deed of Settlement was drawn up, and the reserved fund limited to £20,000 (which the company now hold in Exchequer Bills), it was not anticipated that the operations would have been on so extensive a scale, and the liabilities have, consequently, increased much beyond the sum for which that £20,000 was considered a sufficient guarantee."

It was then moved, seconded, and carried unanimously,—

That the report, now read, be received and adopted.

The ballot was then proceeded with, when Russell Ellice, Esq., and Walter Shairp, Esq., were re-elected directors, and Alexander Bruce, Esq., an auditor of the company.

The half-yearly general meeting was then adjourned, and a special meeting immediately held for the purpose of increasing the reserved fund.

Whereupon, after some discussion, the following resolution was adopted:—

"That the directors be, and are hereby authorised, to increase the amount of the reserved fund beyond the amount of £20,000, now limited by the Deed of Settlement, and that such increase be made by adding to the present reserved fund 5 per cent. upon the dividend this day declared, and upon the dividends hereafter to be declared, until such reserved fund shall be made up, and amount to the sum of £40,000."

After an announcement by the chairman that another special meeting will be held at the offices of the company, on Wednesday, the 30th day of January instant, to confirm the preceding resolution,—

It was moved by Charles P. Grenfell, Esq., M.P., seconded by Thomas Curtis, Esq., and carried unanimously,—

That the special thanks of this meeting be given to the chairman, Russell Ellice, Esq., for the able and zealous manner in which he has conducted the affairs of the company, and to the other directors for their cordial co-operation.

CONSOLIDATED COPPER MINES OF COBRE ASSOCIATION.—Notice is hereby given, that a DIVIDEND of THREE POUNDS per share (exclusive of income tax) will be PAID to the holders of certificates in this company, at the office of the association, No. 26, Austinfriars, on and after the 17th inst., between the hours of Eleven and Three o'clock. The proprietors are requested to leave their certificates at the office for examination three clear days before the day of payment.

By order of the court of directors, **WM. LECKIE, Secretary.**
26, Austinfriars, Jan. 9, 1850.

WEST POLGOOTH TIN MINING COMPANY
Capital £12500, in 2500 shares, of £5 each.
CONDUCTED ON THE COST-BOOK SYSTEM.
Deposit £1 per share.

OFFICES, 15, OLD BROAD-STREET.

This valuable MINERAL PROPERTY is that portion of the unworked ore ground in a line between the Great Poldioth Mines and the Great Polgooth Mines: in extent it is about three-quarters of a mile on the course of the lodes, and its mean breadth half a mile—held under a lease of 21 years from Lord Mount Edgcumbe, at 18th duns. The Howas Mine returned from one lode the greatest quantity of tin in the time of any mine in the kingdom. Polgooth is now making, at a large profit, returns of nearly £3000 per month; both these mines are more than 110 fathoms deep. West Polgooth Mine is only down 34 fathoms—consequently there remains above 70 fathoms of virgin ore ground for the present company to return before they reach the level of the adjoining mines, and which is computed to be sufficient to employ 800 persons for 20 years to come. The tin is of a very fine quality, and with an outlay of £6000, 35 tons of tin per month may be returned, yielding a profit of 25 per cent.

The management is by a London committee, and the works on the mine prosecuted at the lowest possible cost.

A prospectus, with lithograph plan and section attached, may be had by applying to Mr. Robert Williams, the parser, at Mr. Richardson's office, 15, Old Broad-street, where the Cost-book, containing the details of the directors, the rules, reports, specimens, working plans, &c., may be seen, and of whom full particulars may be known.

Only 650 shares more are to be issued, and which will be open to the public till the 20th of January ensuing.

STRUVE'S PATENT MINE VENTILATOR.
Cost—£150.

TO COLLIERY PROPRIETORS.

Quantity of air passed through a Mine almost unlimited, to the extent of 200,000 cubic feet per minute, if necessary—depending on size of apparatus.

COST OF AN APPARATUS to produce a ventilation of 20,000 cubic feet per minute, ONE HUNDRED AND FIFTY POUNDS, exclusive of patent right. This amount of ventilation would be sufficient for a mine working 150 tons per day, provided it was not very dry; in which case it would be desirable to provide for 30,000 cubic feet of air per minute. The capabilities of the Ventilator may be doubled at any future time, at a comparatively small cost.

The Ventilator has been at work for upwards of nine months at the Eaglesbush Colliery, near Neath, working under a rarefaction of 2½ to 3 inches of water, which demonstrates the impracticability of furnace ventilation, when the shafts are shallow and the airways small.—It is practical to rarify a mine by this ventilator to the extent of 2 feet of water, or 2 inches of mercury.

LICENSES will be GRANTED on application to **MR. WILLIAM PRICE STRUVE, Swansea,** CIVIL ENGINEER AND MINERAL SURVEYOR.

PATENT IMPROVEMENTS IN CHRONOMETERS, WATCHES AND CLOCKS.

E. J. DENT, 82, Strand; 33, Cockspur-street; 34, Royal Exchange (clock tower area) Watch and Clock Maker, BY APPOINTMENT, to the Queen and his Royal Highness Prince Albert, begs to acquaint the public, that the manufacture of his chronometers, watches, and clocks, is secured by three separate patents, respectively, granted in 1836, 1840, 1842. Silver lever watches, jewelled in four holes, 6s. each; in gold cases, from 4s. to £10 extra. Gold horizontal watches, with gold dials, from 8s. to 12s. each.

DENT'S PATENT DIALDOSCOPE, or Meridian Instrument, is now ready for delivery.—Pamphlets containing a description and directions for its use 1s. each, but to customers gratis.

INDURATED AND IMPERVIOUS STONE, CHALK, &c.

—AGENTS, with capital, are WANTED in all TOWNS to SUPPLY (under British and Foreign Patents) the great demand for HUTCHISON'S MATERIALS—hard as granite, impervious to moisture, vermin, &c.; the cheapest and most durable for all buildings, hydraulic, paving, monumental and decorative work.—The profits are large. Apply to **HUTCHISON & CO.,** 140, Strand, London; or to Turnbridge Wells, Kent, and Caen, Normandy, stating name, address, and capital at command.

N.B.—Houses cured of damp. The produce of soft stone quarries, chalk, plaster of Paris, wood, pasteboard, and all absorbent materials indurated to resist frost, vermin, &c.

LICENSES GRANTED.

SEWERAGE OF LONDON.—THE ATTENTION of the

COMMISSIONERS appointed to determine upon the MOST EFFICIENT MATERIAL for the CONSTRUCTION of the SEWERS OF LONDON, is particularly directed to the ASPHALTE OF SEYSEL, which more than any other material is applicable to the CONSTRUCTING and INTERNAL COATING OF BRICK CULVERTS and OTHER CHANNELS FOR DRAINAGE.

The experiments made by the Royal Authority on the embankment of Plymouth Citadel, constructed of Seyssel Asphaltic Brickwork, under the orders of the Hon. Board of Ordnance, have fully proved the superiority, adhesion, and strength of Seyssel Asphaltic over all other contentious compositions. A printed account of these experiments can be had on application to **I. FARRELL, Secretary,** Seyssel Asphaltic Company—"Claridge's Patent"—Established 1838.

Note.—The application of the Asphaltic of Seyssel is specially recommended by the Commissioners on the Fine Arts for covering the ground line of brickwork in marshy situations, and it has been suggested that it would be peculiarly applicable for covering the crevices of closed grave yards, and for the construction of catacombs.

EUROPEAN GAS COMPANY, 39, Finsbury-circus, London.
January 10, 1850.—The directors hereby give Notice, that a CALL of ONE POUND per share, on the Wednesday, 18th inst., is required to be paid on Monday, the 18th day of March next, at the Commercial Bank of London, Lothbury, pursuant to the provisions of the Deed of Settlement.
By order of the board, **J. B. GREAVES, Secretary.**

LOANS ON DEBENTURES.—THE CALEDONIAN RAILWAY COMPANY are prepared to RECEIVE TENDERS OF LOANS, in sums not less than £500.—Applications to be made or addressed to this office.
By order, **D. HANKINE, Treasurer.**
125, George-street, Edinburgh, Dec. 1, 1849.

CAMERON'S COALBROOK STEAM COAL & SWANSEA AND LOUGHOR RAILWAY COMPANY.—Notice is hereby given, that the next ORDINARY MEETING of the shareholders of this company will be HELD at the company's offices, 2, Moorgate-street, London, on Tuesday, the 29th day of January inst., at One o'clock in the afternoon precisely, in pursuance of the provisions of the Act of Parliament relative thereto, for the purpose of receiving the report of the directors with reference to the company's railway.
By order of the board of directors, **A. C. HOWDEN, Secretary.**
2, Moorgate-street, London, Jan. 10, 1850.

CLARENCE RAILWAY.—Notice is hereby given, that the HALF-YEARLY DIVIDEND, due this day, upon the Second Class Preferential Shares, at the rate of 5 per cent. per annum, is now in course of PAYMENT at the company's offices, 80, Old Broad-street, London.
By order of the committee of management, **ALEXANDER COTTRELL.**
January 1, 1850.

COLONIAL BANK.—The court of directors of the COLONIAL BANK hereby give Notice, that the DIVIDEND declared at the Half-Yearly General Meeting, held this day, will be PAYABLE at their house, No. 13, Bishopsgate-street-within, on and after the 14th inst., between the hours of Eleven and Three.
By order of the court of directors, **C. A. CALVERT, Secretary.**
13, Bishopsgate-street-within, Jan. 8, 1850.

LONDON AND WESTMINSTER BANK.—Notice is hereby given, that the ANNUAL GENERAL MEETING of this company will be HELD at the Bank, in Lothbury, on Wednesday, the 6th day of January next, at One o'clock precisely, to declare a dividend, to appoint three directors, in the room of John Garratt Catley, Esq., James Denis de Vitre, Esq., and George Hanson, Esq., who retire by rotation (but being eligible, offer themselves for re-election), and for other purposes.
By order of the board, **J. W. GILBERT, General Manager.**
Lothbury, Nov. 21, 1849.

The transfer books of the company will be closed from the 1st of January to the 21st of January next, to prepare for the dividend.

ROYAL BRITISH BANK, incorporated by Charter 17th September, 1849, for receiving Deposits at Interest, discounting Bills, making Advances on approved securities, granting Cash Credits, and transacting every other description of Banking Business on the Scottish System, 16, Tokenhouse-yard, Lothbury. Commencing Capital, £100,000, with power of gradual increase to £200,000.

The directors have the satisfaction to announce that they are about to open branches of the Royal British Bank in the Strand (No. 429, corner of Agar-street), and No. 77, Bridge-road, Lambeth.

TERMS OF BUSINESS.

The rates of interest, &c., are to be charged on advances, and allowed on accounts and deposits, must, of course, vary with the state of the market, and the value of money, which so frequently fluctuates; but the directors propose that the following shall, until further notice, be their terms of business:—

Deposit Accounts.—Three per cent. reckoned daily on all deposits for six months, of £1 and upwards, and the interest paid monthly, or accumulated half-yearly, at the option of the depositor, for every sum not then drawn, and which in such case will for the next period of six months form together an increased capital sum, bearing interest at three per cent.; and if not then drawn, be again accumulated as above for the next half-yearly period, and so on progressively, compounding the interest half-yearly. But in any particular case of need, the directors will, if the circumstances justify an exception from their rules, pay up principal and interest on demand.

The Bank having, by its charter, the peculiar privilege of gradually increasing its capital, will, in allotting new shares, give a preference, after the existing shareholders, to depositors who may wish to become proprietors, allowing three per cent. interest on the deposits so set apart for shares.

Drawing or Current Accounts.—One per cent. interest, reckoned from day to day, to be allowed on all balances constant for six months, of £100 and upwards, and two per cent. on all such balances exceeding £200; but the permanent maintenance of any balance will not be insisted on. This point will be optional with the customer.

Cash credit accounts will be granted to respectable parties on personal security, or such guarantee as may be satisfactory to the Bank. A commission of one per cent. will be charged on the amount of the credit, but interest (five per cent.) will be only debited on the balance of actual cash from time to time drawn out by the party, after deduction of the sums paid in.

Official receipts, on the one hand, will be given for every sum paid in, and the cheques, on the other, will be preserved by the Bank till the succeeding half-yearly balance, when the accounts will be certified and the vouchers exchanged, except in cases where parties may specially wish for a different arrangement.

Advances or loans on promissory notes, with marketable securities readily convertible, will be made, at rates proportioned to the nature and value of the security in each case. Discounts of bills of exchange will be made at the rates of the day.

All bills for discount to be lodged daily before 12 at noon, and called for after 2 P.M. Remittances will be made to, and bills collected in, any place in England, Scotland, or Ireland, or on the continent of Europe, where there is a banker; as also in America, the West Indies, India or China.

Dividends, &c., will be received for customers or shareholders, without charge. No charge will be made for keeping accounts, nor any fee or gratuity allowed to be received from a customer or applicant by any one in the Bank's employment.

Forms of application for the opening of accounts, &c., are ready to be supplied at the Bank, or will be sent by post to any who may require them.
By order of the court of directors, **HUGH INNES CAMERON, General Manager.**
16, Tokenhouse-yard, Lothbury, January 1, 1850.

WARRANTED SAFETY FUSE.—W. BRUNTON & CO. beg to inform Mine Agents, Contractors, and Merchants, that having completed their machinery for the MANUFACTURE of the ABOVE ARTICLE, they are enabled to offer FUSE of a very superior quality, and at considerably reduced prices.

W. B. & Co. can SUPPLY FUSE in ANY LENGTHS that may be required.

Penhellick Fuse Factory, Pool, Truro, Cornwall.

TESTIMONIALS.

Messrs. W. BRUNTON & Co. North Pool Mine, Nov. 27, 1849.
GENTLEMEN.—We have had your Safety Fuse in constant use during the last seven months, and have much pleasure in expressing our satisfaction with it, and in being able to tell you that we have not had a single complaint of your Fuse made by any of our men during the whole period—though they are particularly instructed to return any bad materials which may be supplied to them.

JAMES EVANS, Manager, FREDERICK EVANS, JOHN NANCARROW, HENRY JAMES.

Messrs. W. BRUNTON & Co. Tineroff Mine, Nov. 27, 1849.

GENTLEMEN.—Since last March, when you commenced manufacturing Safety Fuse, we have had Fuse of your make in daily use in all parts of our mine, and can with strict impartiality state that the article supplied by you has been excellent. In proof of this we may mention, that during the whole of that time we have not had a single accident of any description.

PETER FLOYD, Manager, JOHN THOMAS, THOMAS STAINSBY, HENRY HOCKEN, THOMAS LEAN, RICHARD MARTIN.

Messrs. W. BRUNTON & Co. Wheat Agar Mine, Nov. 28, 1849.

GENTLEMEN.—There has been a good deal of your Fuse used at our mine, and we can safely pronounce it to be as good an article as we ever saw.

ALEX. EUDEY, Manager, JOSEPH EUDEY.

Messrs. W. BRUNTON & Co. South Roskear Mine, Nov. 29, 1849.

GENTLEMEN.—Your Fuse is a capital article, so far as our experience of it goes. It is well made and certain in its operation. The men have brought no complaints of it, nor has a single accident occurred with it.

WILLIAM THOMAS, JOHN DUNKIN.

Messrs. W. BRUNTON & Co. North Roskear Mine, Nov. 30, 1849.

GENTLEMEN.—All the Fuse you have sent to this mine, during several months past, has been as good as we have ever had from the other Fuse factories. There has been no fault found with it, nor has there been any accident in using it.

JOSEPH VIVIAN, Manager, JOHN HODGE.

Messrs. W. BRUNTON & Co. Cook's Kitchen Mine, Nov. 29, 1849.

GENTLEMEN.—We very cheerfully give our testimony to the good quality of your Fuse—for eight months we have used it, and no accident has occurred.

JOSEPH VIVIAN, Manager, JOHN IVEY, W. G. HILL, RICHARD BENNETTS.

Messrs. W. BRUNTON & Co. Carn Brea Mine, Nov. 29, 1849.

GENTLEMEN.—We have used 9000 coils of your Fuse in our mine in the course of the last eight months; and have pleasure in stating that not a single case of accident has arisen therefrom, and we consider your Fuse as good as any that is made.

R. H. PIKE, Furer, ABRAHAM BENNETTS, JOHN KEENE, Managing JOHN VIVIAN, JAMES MINERS, Agents, JOHN JAMES, WILLIAM ROBERTS, JOHN DAW.

Messrs. W. BRUNTON & Co. Penhellick Fuse Factory.

GENTLEMEN.—We have used, and are still using, your Fuse, and have no hesitation in expressing our conviction that it is, in all respects, entitled to the character of Safety Fuse—being as good an article, and as safe in use as any we have seen.

WILLIAM JEFFERY, Lanarth Mine, JOSEPH MICHELL, East Wheal Fortune, WM. H. VERRAN, East Wheal Fortune, FRANCIS BENNETTS, Manager, JAMES WILLIAMS, FRANCIS PEARSE, FRANCIS KENT.

Messrs. W. BRUNTON & Co. Prestons Colliery, Edinburgh, Sept. 17, 1849.

GENTLEMEN.—The miners inform me that the Fuses are of excellent quality, and have not lost a single shot since the commencement; while, with some of a very similar appearance we used before, nearly half the charges mislaid fire.

JOHN GRIEVE.

JOSEPH DEELEY, of the LONDON and NEWPORT IRON-WORKS, NEWPORT, MONMOUTHSHIRE, respectfully recommends to the notice of the public his PATENT FOUNDRY FURNACE, which has been effectually tested, and is now in constant use at the above works, where it may be seen by all persons interested. This furnace operates without the aid of any motive-power to impel the air. An immense saving is more than sufficient; a loss of only 22 lbs. of iron to the ton is sustained in smelting. It is also available for large or small work of every description, and may be tapped off as required.

The IRON MELTED in this furnace also undergoes an extraordinary improvement in quality. SCOTCH PIG and SCRAP are returned equal to cold-blast in point of strength, and capable of being chipped or filed with the greatest facility.

FOUNDRIES USING this FURNACE may exist in the most densely populated cities, without causing the least nuisance—all smoke, dust, and noise being avoided. The Continental, Colonial, Scotch, and Irish PATENT RIGHTS are for disposal; the Patentees would also treat for the purchase of Patent Rights, or Grant Licenses to manufacture for certain counties or districts in England or Wales.

APPLY TO THE PATENTEES AS ABOVE.

RAILWAY CARRIAGE AXLE, LOCOMOTIVE AND MARINE ENGINE BEARINGS, of STIRLING'S PATENT METAL.—These ALLOYS are found to be SUPERIOR to every other COMPOSITION of METAL for the ABOVE PURPOSES, and are in EXTENSIVE USE on RAILWAYS and in MARINE and GENERAL ENGINES. They do not heat in friction, nor injure the axle or shaft, and they wear much longer, while they are cheaper, and in every respect more economical than any other metals.

CASTINGS of all DESCRIPTIONS, for GENERAL MACHINERY, to be obtained of **M. E. A. S. AND CO.,** ORDNANCE AND BRASS FOUNDRY AND PATENT METAL WORKS, FIELDGATE-STREET, WHITECHAPEL.

BY HER MAJESTY'S PATENT.

DUNN'S IMPROVED MODE OF REMOVING RAILWAY CARRIAGES FROM ONE LINE TO ANOTHER.

THE ADVANTAGES of the PATENT TRAVERSERS over those in ordinary use are, that there is no expensive gear attached, and they are not liable to get out of order; they are easily cleaned and oiled; the foundations are formed upon the simplest sleepers; the cross tram-rails are upon a level with the permanent rails, leaving no break or recess whatever, and the roads are as firm and steady as the general line. The whole of the gear is simple, strong, and inexpensive, compared with others, and leaving considerable room in a station than turntables, and at a saving of from 200 to 300 per cent. over the same. One of these Trucks is now working 10 lines of rails at the Peterborough Station of the Eastern Counties Railway; another at the Salford Station, Manchester; and one is working 9 lines of rails on the Paris and Lyons Railway. It has also been introduced at many smaller stations throughout the country, for goods warehouses, stone quarries, collieries, contractors, &c.; and the engineer and directors of the Lancashire and Yorkshire Railway Company decided to work the chief stations at Liverpool and Bradford by two Traversers in each, working four lines of road per Traverser, in preference to all other plans submitted.

MANUFACTURED IN ENGLAND solely by **THOMAS DUNN, Windsor Bridge Iron-works, near Manchester; in SCOTLAND, by Messrs. SHANKS and CO., Johnstone, near Glasgow; in FRANCE, by VARRALL, MIDDLETON, & ELWELL, Ingenieurs Mecaniciens, No. 1, Avenue Trudaine, Paris; and BUDDICOM and CIE, Ateliers de Reparations, Soireville-la-Rouen.**

For price and particulars regarding the various modes of working and turning, apply to **MR. THOMAS DUNN, WINDSOR BRIDGE IRON-WORKS, near Manchester,** where various sizes are kept in stock. Also, Improved Screw Jacks, Crabs, and Blocks.

A good selection of Patterns for Cranes, Water Pillars, Engine Tables, Hydraulic Wheel Forcing and Chain Testing Machines, Hydraulic and Screw Presses, &c.

STEVENSON AND SON, GAS ENGINEERS, IRON and BRASS FOUNDERS, and CONTRACTORS for the ERECTION of GAS-WORKS, inclusive of APPARATUS, of every description, for the MANUFACTURE OF GAS, and the FITTINGS of from 20, to 20,000 LIGHTS, whether for Public or Private use.

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MANUFACTURERS of STATION METERS and GOVERNORS; and CONSUMERS' GAS-METERS, of the most approved construction.

CAST-IRON MAINS SUPPLIED and LAID for GAS or WATER; Street Lamp-posts, Brackets, and Brooms, Copper, Iron, or Tin Lanterns.

TANKS and LIQUOR BACKS, of any dimensions, in Cast-iron or Galvanised Wrought-iron, constructed and erected.

THE PATENT SEMAPHORE RAILWAY SIGNALS; and RAILWAY LAMPS, for Stations, Engines, Carriages, Signalmen, &c.

REGISTERING TURN-STILES, for Bridges, Piers, Baths, Public Gardens, &c.

ARCHITECTURAL DESIGNS CARVED in WOOD, or MODELLED in WAX or COMPOSITION, by Artists on the premises, and CAST in BRONZE, BRASS, IRON, &c. And DRAWINGS, PLANS, and SPECIFICATIONS submitted.

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DEPOT—No. 89, MINORIES.

This APPARATUS is confidently recommended to the notice of Proprietors of Mines, Shipowners, Engineers, Smiths, &c., being a most effectual form of VENTILATION for MINES, SHIPS, BUILDINGS, &c., and at the same time a powerful and economical FURNACE and FORGE BLOWER.

For description of the machine, vide *Mining Journal* of November 17, 1849.

WIRE ROPE.—The Undersigned beg to inform the public, that they have become SOLE LICENSEES of MR. ANDREW SMITH, for the MANUFACTURE and SALE of his PATENT WIRE ROPE; and having fitted their premises with his very superior improved machinery, have only to assure those who may favour them with their orders, that the same care and attention shall always be bestowed which they have reason to believe, has secured them such general approval.

LIGHTNING CONDUCTORS, SIGNAL CORD, and SASH LINE, always in stock. **WILKINS & WEATHERLY.**

Patent Wire Rope Works, No. 29, High-street, Wapping, London.

SMOKE ANNIHILATOR.—THE PATENT IRON FOSTER

FIRE or FUEL CAGE, estimated to last several years, is an EFFECTUAL CURE FOR SMOKEY CHIMNEYS—producing a draught in the centre of the grate, and throwing out a great heat. Parties using this will find a considerable saving to the ordinary method.—Price 10s. Sold by Mr. Robson, 30, Great Portland-street, Portland-place, where it may be seen in operation daily, from Ten to Five o'clock.

The PATENT TO BE DISPOSED OF, on application to J. Browne, Esq., the patentee, at the above address.

OILS.—BROTHERTON & CO. beg to call the attention of all parties EMPLOYING STEAM POWER to their PATENT PURIFIED OILS, for the economical working of STEAM-ENGINES and MACHINERY and BURNING IN LAMPS. The adoption of its use effects a saving of 25 per cent. over any other oil, and its properties are such as to greatly preserve machinery bearings.